

# THE IRON AGE

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## Expansion of the Gier Pressed Steel Co.

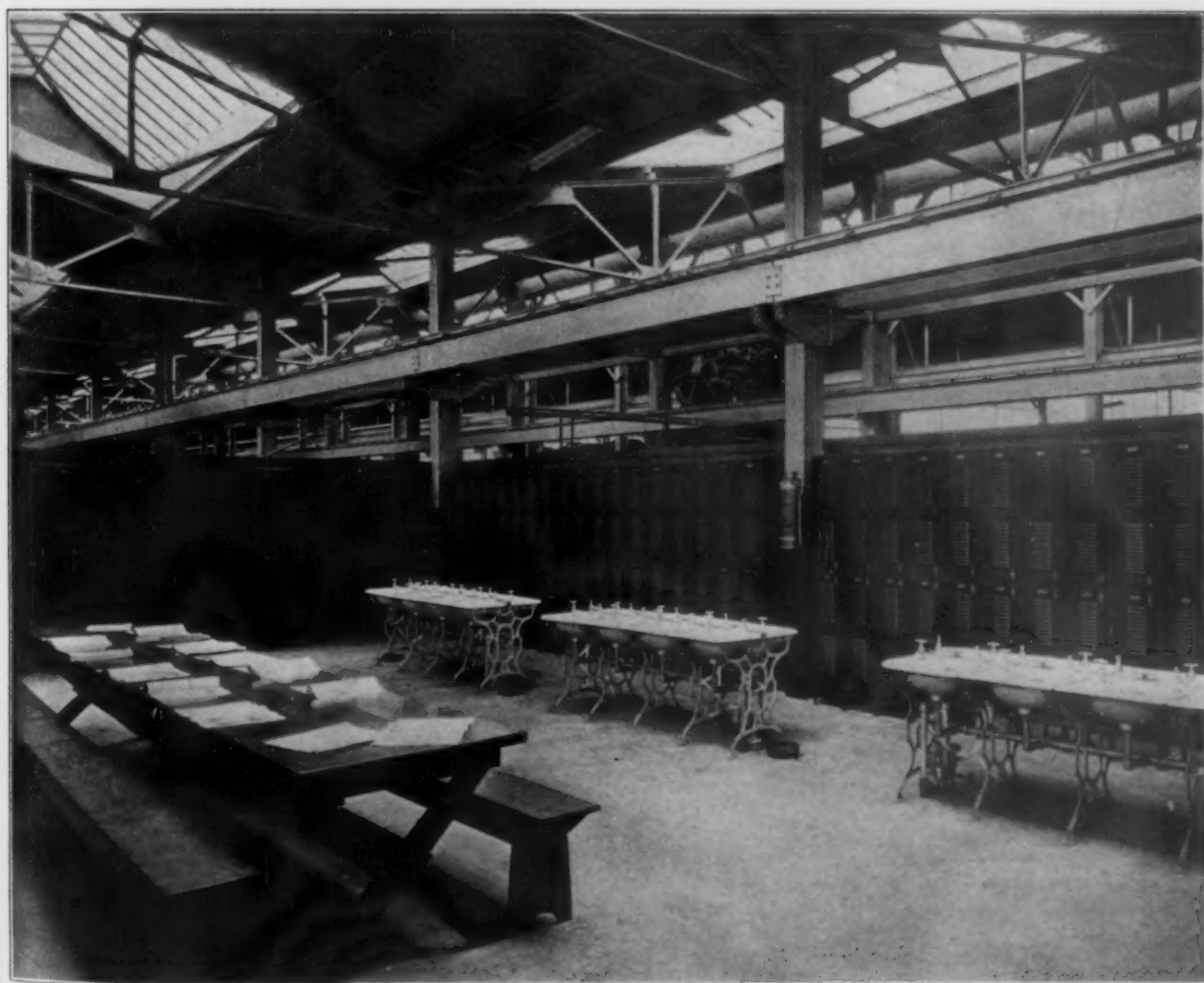
From Small Start Nine Years Ago to  
a Large Daylight Shop—Comfort and  
Convenience of Employees Considered

—BY CHARLES LUNDBERG—

THE new plant of the Gier Pressed Steel Co., Lansing, Mich., contains 108,000 sq. ft. When the company was founded in 1908 by Burton S. Gier it occupied 300 sq. ft. It was first engaged in the manufacture of postal-card racks. To-day it produces pressed steel work ranging from the smallest to the largest, and for various purposes and industries. Its capital has grown from \$1,600 to \$800,000, and the site upon which its plant stands comprises 8½ acres. Its equipment includes 69 power presses, including a 120-ton toggle press.

A thought inspired by the growth of the company is that while comment on the quick development and

perfecting of automobile-building plants is frequent, with justifiable wonderment thereat, commensurate attention is not given to the industries which have grown with the automobile and without which the modern automobile would be impossible. The development of this company, and of the pressed-steel industry generally, has been a concomitant of progress in automobile manufacture because of quantity production, and the adaptability of pressed steel for automobile construction, a result being that a great assembly of equipment for pressing and stamping steel is available for service to other industries which of themselves would not have warranted such



The Men's Locker and Washroom Is Provided with Tables, Chairs and Benches to Enable the Employees to Eat Their Luncheon in Comfort and Afterward Read the Magazines Which Are Provided

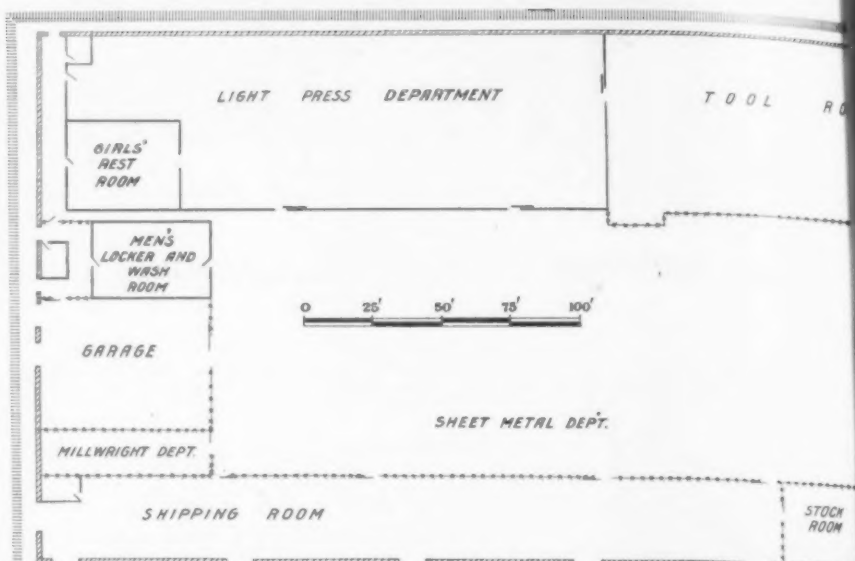
a large investment of capital in a special line.

In attempting a general description of the new plant of the company one is puzzled to know just what, if anything, should be emphasized, for the reason that the plant in its entirety stands on such a high plane of excellence. One can easily expatiate on the design of the huge building itself, on the orderly arrangement within, on the consideration that has been shown for the workers, on the lighting, the ventilation, the broad aisles and even on the efficient method of cutting up and handling scrap material.

The operating department of the company is contained in one steel and glass building of double monitor construction, 180 x 600 ft. It has dust-proof floors, and is essentially a daylight shop, the walls, except for about 4 ft. above the floor, being entirely of glass set in steel sash. There are no adjacent buildings to obstruct or lessen the admission of light. Along one side stretches a railroad dock, built of concrete, 10 x 600 ft. The building contains six long bays. Each monitor bay is served by a 20-ton crane running the length of the building, and each of the bays between by 5-ton cranes having similar travel. Running transversely across one end of the building is another 20-ton crane, the runway of which is extended a considerable distance outside of the building to carry material to and from cars, and later will serve a contemplated steel storage building as well as the shop. On the transverse runway also travels a 3-ton crane, which among other things is used for the handling of scrap material, more of which will be said later. A new office building and a power plant complete the number of structures now erected.

#### Made Shop Good Place to Work

In its old quarters on North Grand Street, Lansing, the company was cramped for space to such

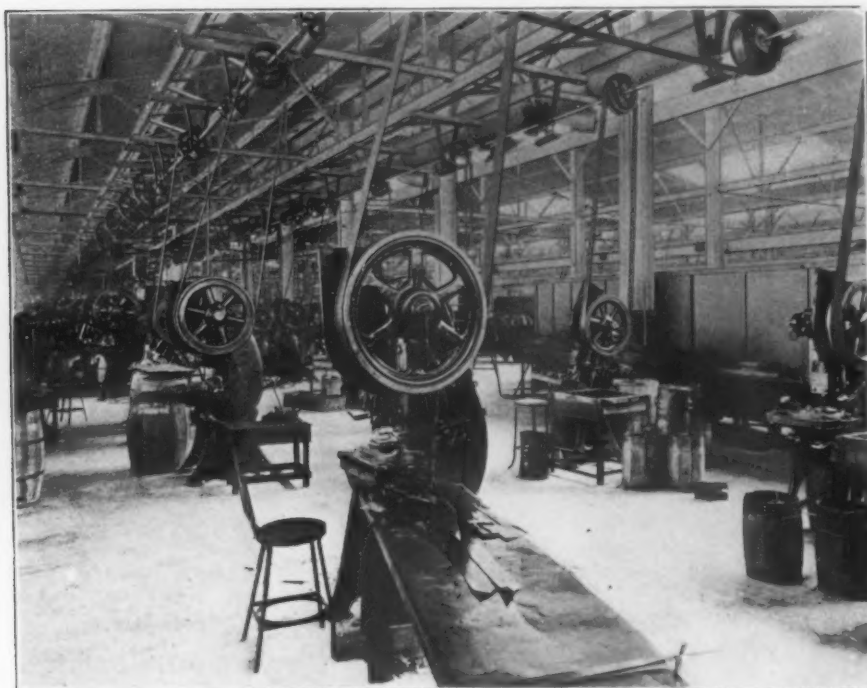


The Various Departments of the Shop Are Separated by Partitions of Heavy Wire Netting

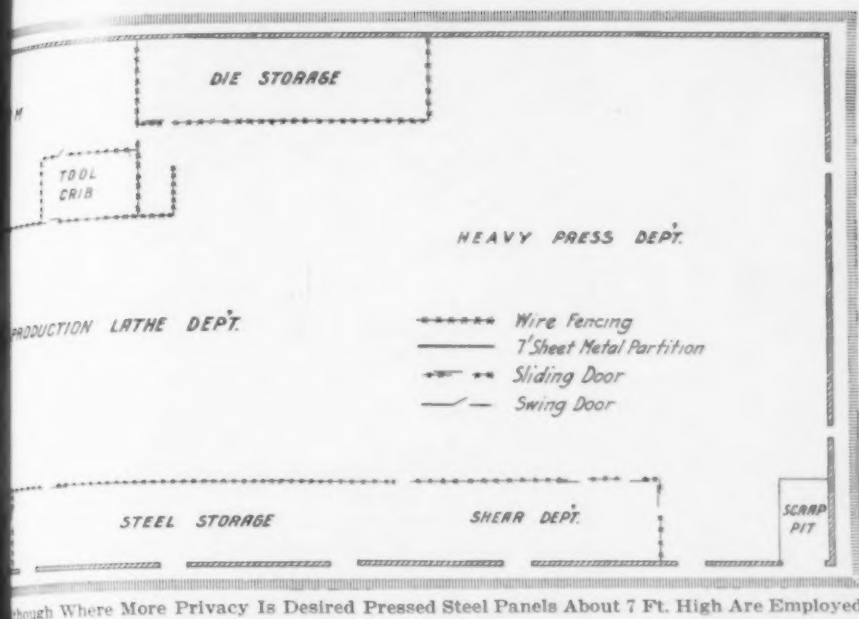
a degree that B. S. Gier realized that conditions were unfavorable both to production and the welfare of the men, and he had both in mind when he went about planning a new plant. With regard to the welfare of the employees Mr. Gier was desirous of creating a shop in which men would like to work, in fact, this was one of his dominating ideas. An interesting point of consideration for the human element is exemplified by the placing of clear glass in the bottom row of panes in the steel sash. To some this may seem unimportant, others may not like the idea at all. Mr. Gier explains it as follows:

We wanted to make the shop a good place to work in. Here we are with plenty of grass and trees around. Certainly the men like a glance at these surroundings once in a while, and they do not have a sense of being penned in. If a severe storm should come up suddenly they would become uneasy if they could not look out, and they would be itching to get to the doors, but if they can raise their heads and see through the windows that everything is all right, they are more disposed to go on with their work. Business men are pretty well agreed that the better surroundings men are given, the better men they are. Therefore you will see we have not provided what we have as an act of philanthropy. A thoroughly modern and well-equipped plant, with proper attention given to the comfort and convenience of the employees, in our estimation, is only good business.

First observed, on entering the shop building through a passageway from the office building, is a first-aid room equipped with all of the essentials for treating accident cases. This room which, with its equipment, is entirely in white, is in charge of an experienced nurse who is on duty throughout working hours. She is competent to attend to minor injuries, also to dress those of a more serious character after they have first been treated by a physician. In addition to these duties, the nurse also serves as a matron for the women who are employed in the light press department, which adjoins the first-aid room. For men and women there are separate and



Some Privacy Is Afforded the Women Employed in the Light Press Department by a Steel Paneled Partition



commodious rooms equipped with steel lockers, white enamel washbowls, hot and cold water, and tables, chairs, and benches.

The light press department, wherein the women are employed, is about 60 x 160 ft. and is inclosed by a partition of pressed steel panels, about 8 ft. in height and painted olive green, this color being agreeable to the eye as well as durable. The small presses are equipped with safety devices of one kind or another, mostly of the type which prevent the tripping of the press until two levers are pressed down, this action engaging both arms and necessarily taking the hands away from the die. Stools with backs are provided for the women.

#### Heavy Stamping Department Equipment

A view of the heavy stamping department is reproduced herewith, and it sets forth more concisely than can be done by words the orderly arrangement of the big presses and the abundant aisle space which permits the free movement of shop trucks. Shown, also, back of the presses, are large hoods for collecting and carrying away heat, smoke and gases which may escape from a battery of oil-burning annealing ovens. The largest press, in point of size, is one of the toggle type, weighing 120 tons, used for the forming of automobile body shrouds and panels, fenders and similar sheet metal parts. Two slightly smaller toggle presses are used for the production of radiator pans, radiator casings, etc. Also conspicuous is a battery of large, heavy, straight-sided presses, one of which, with its 17-in. shaft, is capable of drawing cold a pan 21 in. in diameter by 6 in. deep out of  $\frac{3}{4}$ -in. steel. This press is also capable of working cold steel up to  $\frac{3}{4}$  in. in thickness. All the large presses have direct motor drive.

Among other departments may be enumerated one for working light sheet metal, such as door panels; one for automobile body work, a woodworking shop for crating and the making of patterns, a

storage room for factory supplies, another for storing dies, a lathe department for rough finishing certain kinds of stampings, a shearing department equipped with three plate-shearing machines, shipping and receiving departments and what may be called a scrap department. The last named deserves some detailed mention.

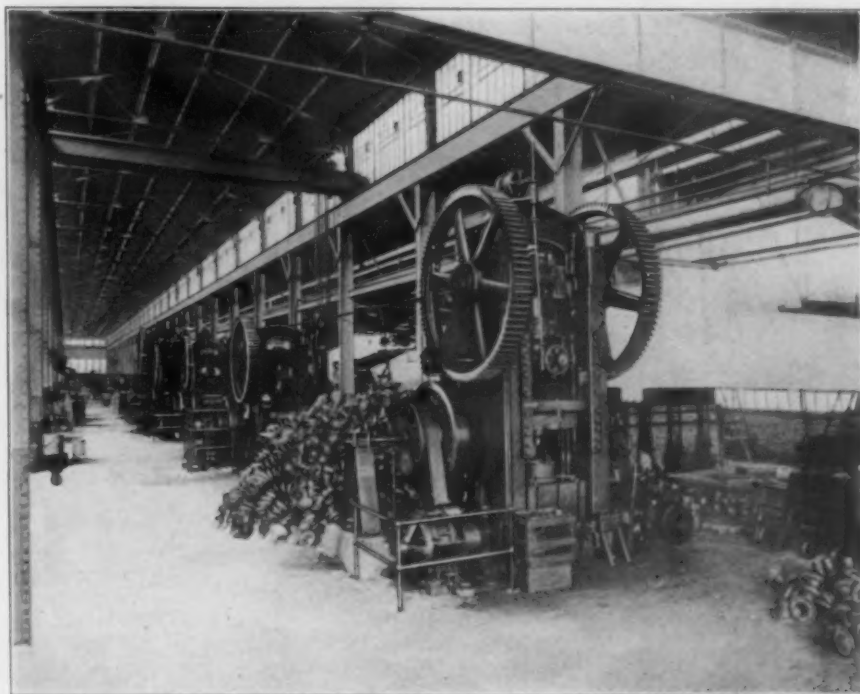
#### How Scrap is Handled

At one end of the building is a concrete pit 19 x 28 ft. and 8 ft. deep, at the edge of which are placed two power shearing machines. To the latter are fed the steel strips from which blanks have been punched, and as they are sheared the pieces slide down a metal chute into the pit, the

chutes permitting an even distribution of the pieces over the area of the pit. The 3-ton crane, previously referred to, is equipped with an electric magnet and with its aid 50 tons of cut material can be placed in a car in  $3\frac{1}{2}$  hours.

Of prime importance in the plant is the large tool-room or die-making department, a view of which accompanies this article. Like the small-press department, it is separated from the main part of the shop, but only in part, by the pressed-steel panels, the remainder of the partition being heavy wire netting. In this department the company takes special pride and asserts that every machine and device for expediting the manufacturing of dies has been provided.

In all production departments the company uses the Gisholt Machine Co.'s Periodigraph which enables it to effect proper control over time and its distribution against various operations and over the complete job. It is particularly important to know if an operation is requiring an excessive amount of time for its performance, as once this is ascertained steps may be taken to improve the time on that operation. A feature of all depart-



In the Heavy Press Department Abundant Aisle Space Is Provided for the Free Movement of Shop Trucks





The Steel Strips from Which Blanks Have Been Punched Are Brought to Two Power Shearing Machines Located at the Side of the Scrap Pit Into Which the Cuttings Drop Through Chutes. A Lifting Magnet Is Employed for Handling the Scrap and It Is Possible to Load a Freight Car with 50 Tons in  $3\frac{1}{2}$  Hr.

ments consists of raised platforms where the department foremen and clerks can sit and have a clear view of the floor.

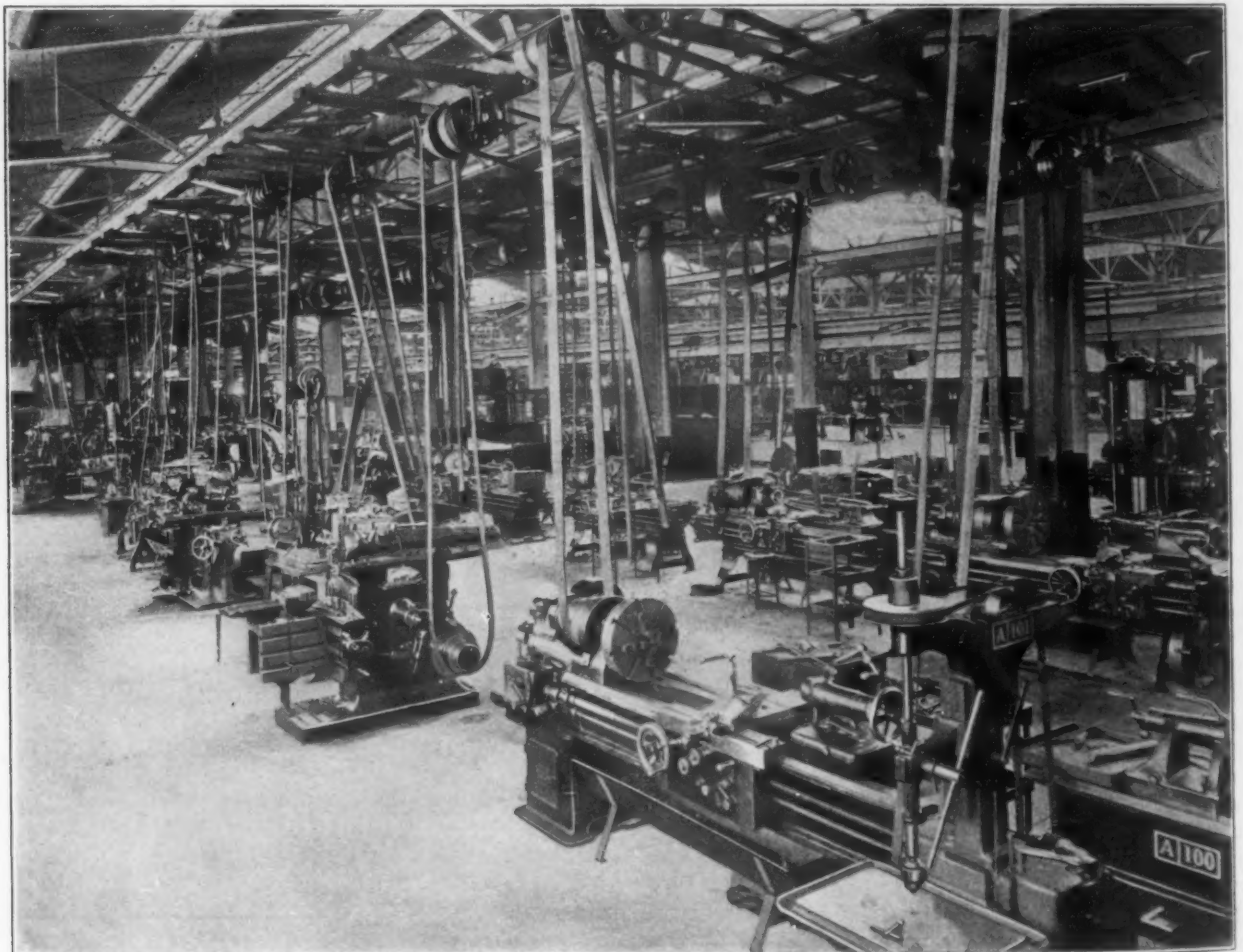
Heating and ventilating are effected by an overhead system with American Blower Co. apparatus. Artificial light is furnished by the Cooper-Hewitt

mercury vapor system, it being sought in this connection to obtain a maximum diffusion of light with a resultant elimination of shadows. Toilet rooms, constructed of pressed-steel panels, are centrally located at either end of the building, standing on the shop floor, and therefore readily accessible to the men. Sanitary drinking fountains are conveniently located in each department. The office building is a two-story and basement structure of light pressed brick.

The business of the Gier Pressed Steel Co. has been largely making such parts as automobile brake drums, hub flanges, radiator casings, body shrouds and panels, wire wheel hub shells, hub bodies, universal joint casings, wheel parts, etc., as well as general contract work. The general management of the company is in the hands of Burton S. Gier, its founder; David F. Edwards is treasurer; Leo O. Benner, manager of sales; James W. Gier, purchasing agent, and John R. Winter, factory manager.

#### British Cognizance of American Shipbuilding

A transfer of the supremacy in building ships from Great Britain to the United States is likely, according to *Engineering* of London, if organized labor of that nation is unreasonable after the war, if their engineers do not adopt standardization and other economical methods, and if British statesmen do not give industry the best possible consideration. The advantages now held by British shipbuilders in the proximity of coal and iron supplies, steel works and shipyards and shipping ports are, of course, emphasized. High cost of construction and of operation in the United States is also a British advantage. A tramp steamer costing \$330,000 in England in 1913 would, it is said, have cost \$690,000 in the United States, with an expense in sailing favor of the British ship of \$400 per month in wages and \$100 per month for supplies, food, etc.



The Toolroom or Die Making Department Is an Important Section of the Factory and Is Separated in Part by Wire Netting and in Part by Steel Paneled Partitions



# Organizing Many Fighting Industries

With Voluntary Discipline, They Will Support  
Fighting Armies—Director Gifford Reviews  
Accomplishments of Council of National Defense

An inspiring résumé of the recent accomplishments of the Council of National Defense and its Advisory Commission in the work of industrial organization for the war has been prepared by W. S. Gifford, director of the council. The progress made embraces the active direction and adaptation of the nation's railroad facilities for war purposes; the further development of sources of supply for all kinds of war munitions and their component parts, from artillery and machine guns to various forms of motor transport; unusual progress on a comprehensive aviation program; very material assistance to the War Department in the construction of the new army cantonments; the adaptation and augmentation of electric communication lines, both telegraph and telephone; the procuring of leather and textile supplies of all kinds for the new armies; the co-operative development of lumber, copper, aluminum, steel and other raw material sources for the war needs of the Government; notable progress on many phases of the difficult labor problem; extensive assistance in the consummation of the medical preparations for the care of the military forces of the country; and definite accomplishments in the adjustment of commercial conditions and methods to war needs.

## Marshaling of Munitions

"In the work of assisting the War and Navy Departments in securing munitions," says Mr. Gifford, "the General Munitions Board, whose functions the new War Industries Board has taken over, through its committees, composed in part of army and navy officers and in part of civilians, has performed yeoman service in developing new sources of supply for gun forgings and other essentials to the manufacture of artillery. It is not permissible for military reasons to make public details, but the board's work has greatly increased the possibilities for securing both field and machine guns in quantity at a much earlier date than was at first thought possible. Like other branches of the council, the board has done its work in large part through personal conference with manufacturers, securing their loyal co-operation in subordinating commercial demands to the needs of the Government and often in adapting large sections of plant, hitherto used for commercial purposes, to war operations.

"The efforts of the board have not been confined to guns and munitions, however. All kinds of allied supplies come under its jurisdiction, including carriages, limbers, caissons, forge wagons, military vehicles, steel helmets, surgical supplies, optical glass, gages, tools and dies of many kinds. Besides this, all kinds of questions as to price, priority of shipment and methods of expediting production have been referred to the board by the departments for advice. Extensive aid in accountancy problems has been furnished. The board has served as a general clearing-house for innumerable related problems coming both from the Government departments and from the committees on munitions, raw materials and supplies of the council.

## Work of the Railroads

"The work of the railroads, combined under a voluntary centralized organization through the council, has been directed in wartime channels through Chairman Willard of the Advisory Commission and the war executive committee of railroad presidents, co-operating with the council. Under this scheme, according to Mr. Willard, the roads have made all transfers of troops on schedule without serious disruption of regular traffic. In spite of an admittedly serious shortage of freight cars and terminal facilities, moreover, through a general effort throughout the country to develop added effi-

ciency in freight car use, the effective supply of coal cars has been greatly increased and general freight traffic has been effectively spurred up. Regular traffic has been the largest in the history of the country and has been constantly increasing, but in spite of that the shortage of freight cars was reduced from 148,627 on May 1 to 105,000 at the end of June."

The work of the Aircraft Production Board has developed rapidly. A bill providing for the increased service has been passed in record time by Congress and signed by the President, making provision for the manufacturer of thousands of military airplanes and training thousands of men for service at the front. Notable progress on the accomplishment of the plan has already been made. The program has been worked out in great detail, including personnel, the standardization of machines for quantity production, equipment of all kinds, including machine guns and scientific apparatus.

## Three Fields Completed

Three of a system of 24 big training fields have already been completed in record time, training machines are now being shipped to them, and instruction in flying has already begun. Reciprocal arrangements have been made for training American cadets in Canada in return for the training of Canadians in the South in the winter. A mission of technical experts has been in Europe for several weeks gathering information for the use of the American Government and American manufacturers.

Through committees and subcommittees of men representative of the producers, the Committee on Raw Materials has been able to keep in touch with the whole range of raw products needed for war uses and has been able to ascertain the amounts of each available and to place at the disposal of the Government departments sources from which it could draw them. Through personal conferences it has been possible frequently to secure speed and convenience in delivery impossible under normal conditions as well as most reasonable prices. Included in the list covered fully by the organization have been steel, sheet steel, ferro alloys, pig tin, tin plate, scrap iron and steel, wire products, wire rope, tubular products, cold rolled and cold drawn steel, copper, aluminum, brass, rubber, cement, alcohol, asbestos, magnesia and roofing, coal tar by-products, lead, mica, nickel, oil, pig iron, iron ore and lake transportation, sulphur, wool and zinc.

## Stimulating Coal Production

"The Committee on Coal Production," Mr. Gifford says, "has been constantly engaged in the work of stimulating production and in arranging for an adequate supply of coal to meet the combined needs of the navy and army, the American civil population, and to some extent the European allies. Through conference with railroad officials and shippers, it has brought about a pooling arrangement for the Atlantic tidewater region which already promises to do away with the waste in car and barge service under the old system of individual consignments and make possible a great increase in shipments to New England and the other northeastern states. A similar arrangement for the Great Lakes and the northwest has been in successful operation for many weeks. It has also been of material service in the readjustment of prices. Particular attention has been given to securing prompt shipment for all war purposes, both military and industrial.

"Dr. Godfrey's Committee on Engineering and Education has been giving thorough study to the relations of American educational institutions to the war and to the best methods to be used in adapting their courses to the national needs both for the conduct of the war and

to the reconstruction period to follow the war. Conferences have been held with leading educators on the problems and their co-operation secured in carrying out the recommendations of the committee. During the past month, a group of distinguished Canadian educators went to Washington for a two-day conference to give American institutions the benefit of their experience during the past two years of war. In addition, the production engineering section of the committee has been working with other divisions of the council in developing new sources of supply for various materials needed in munitions work."

#### In the Motor Truck Field

The Co-operative Committee on Automotive Transport has had most important work to perform in adjusting commercial and industrial conditions to the needs of the Government in its requirements for motor trucks, tractors, airplane engines, motor boats and other forms of machinery driven by internal combustion engines. Its services have been particularly valuable in bringing to the Government the fruit of the standardization work which has made the quantity production of American motor cars one of the marvels of modern industry. Other committees which have performed valuable service, which it is impossible here to set out in detail, have been those on Gas and Electric Service, Locomotives and Cars, Electric Railroad Transportation and Inland Waterways.

"Our nation possesses more producing resources than any other two nations in the world," says Mr. Gifford in conclusion. "Organized as a producing machine, we shall win the war. Individual initiative and self reliance are normally developed in a democracy to a higher degree than in any other form of government. Peoples and institutions have grown under the spur of competition and freedom of action, so that we are noted for our individual efficiency and enterprise. An army must obviously be highly organized and subject to discipline. Individual efforts, no matter how great, must be organized so as to work for a common purpose, if they are to be effective. Not alone team work, but a voluntary acceptance of discipline in the cause of national defense, is imperative. We do not wish to Prussianize America, but each of us must voluntarily submit to the rules and regulations of organization in order that we may build up fighting industries which with their voluntary discipline will stand side by side in efficiency with our fighting armies."

#### Abell-Howe Co. Organized

The Abell-Howe Co., Chicago, has been incorporated to provide for the expansion of the sales and engineering organization inaugurated some months ago by Oliver J. Abell, 565 Washington Boulevard, that city. The new company has acquired important interests in some of the manufacturing companies for whose products it will be the national distributor, and in addition it will continue to market other equipment as sales agent. Among the products to be sold exclusively through the Abell-Howe Co. are "American High-Speed" chain and Howe "One Man" detachable tongue trucks.

Oliver J. Abell is president and treasurer of the new company, Glenn G. Howe is vice-president and C. E. Kane, secretary. Arrangements for representation in the principal distributing centers of the country will be shortly completed.

The General Electric Co. will supply the entire electrical equipment for the Commonwealth Hotel, to be erected in the Times Square district, New York. The power equipment would suffice for a city of 20,000 people. The hotel will have 2500 rooms, and will cost \$15,000,000. Electrical apparatus for lighting, ventilating, heating, pneumatic tube service, vacuum cleaner system, as well as the operating and controlling devices for the kitchen, laundry and refrigerating departments, together with the necessary conduits, cables, wires and lamps.

## MINING EXPERIMENT STATION

### Establishment Is Authorized by the Secretary of the Interior

WASHINGTON, Aug. 21.—The establishment of a mining experiment station at Minneapolis, Minn., under the jurisdiction of the Bureau of Mines, was authorized by an order issued by Secretary of the Interior Lane on Aug. 17. The station will represent the iron mining districts and will work in co-operation with the School of Mines of the University of Minnesota, which is located at Minneapolis. Director Van H. Manning of the Bureau of Mines in recommending the establishment of such a station in a formal letter to the Secretary said:

The bureau should, as soon as possible, give attention to the treatment and concentration of low grade iron ores with the purpose of increasing the iron ore reserves of this country by making available those low grade ores which at present cannot be economically smelted.

Vast as are the ore reserves of Minnesota, at the present rate of production the high grade ores now developed will be almost exhausted within 30 years. However, there are huge deposits of lower grade ores not now utilized, and these will become of great value, if their treatment can be made profitable. Some important problems that must be solved, if the high standards of the mining industry are to be maintained, are:

The concentration of the hematite ores, carrying from 35 to 50 per cent iron, which are now practically worthless.

The concentration of great quantities of magnetite ores, particularly those on the east end of the Mesaba range.

The utilization of titaniferous ores that occur in considerable abundance in northeast Minnesota. Owing to metallurgical difficulties, these are not now utilized.

The concentration of the low grade manganese ores of the Cuyuna range. If these ores could be concentrated and their phosphorus content decreased, they would be very valuable, whereas they are not now utilized to any great extent.

In the opinion of the experts of the Bureau of Mines, there is a large field for experimental and economic work in the iron mining industry. The iron ore mined in the Lake Superior region amounts to about 85 per cent of the total production of the United States. At present, there is a growing interest among operators of this district in regard to beneficiating the lower grades of ore material. This is also true of other districts of the United States which have not been so favorably endowed by nature with high grade ores. The entire question is therefore of national importance and the Bureau feels that it is the duty of the nation to utilize its reserves of iron ores most effectively and economically in view of the fact that high grade ores are rapidly being depleted by the enormous annual draft upon them, the grade of ore produced each year gradually decreasing. The possibilities of beneficiating the leaner material should be determined in order to safeguard the iron and steel industry of the future. Many individual operators are conducting more or less haphazard experiments in regard to the treatment of their particular material and in many instances they are doing the same work, repeating the same mistakes and arriving at the same final results obtained by operators in other districts.

To be most effective the bureau believes the data from all such work should be assembled and supplemented by special investigations which may seem of greatest importance and value to the State as well as the Nation and the results made public for the benefit of individuals taking up such matters in a commercial way. By combining the equipment and personnel of the Minneapolis School of Mines Experimental Station with the United States Bureau of Mines and establishing a main iron ore and central concentrating station, a very effective organization would be obtained and unusual facilities would be available for the coordination and dissemination of data relative to the conservation of the ore reserves of the country.



## Record Production of Fluorspar in 1916

American mines broke another record last year in the production of fluorspar, as shown by statistics compiled under the direction of Ernest F. Burchard, of the United States Geological Survey, Department of the Interior. In 1916 the shipments were 155,735 short tons, valued at \$922,654, an increase of 14 per cent in quantity and of 21 per cent in value over the shipments of 1915, which had been the record year.

The increased demand for fluorspar has come largely from the manufacturers of open-hearth steel, who use the mineral as a flux, but the demand for it in other metallurgic operations and for the manufacture of hydrofluoric acid has been very active.

The bulk of the fluorspar sold in 1916, as in former years, was gravel spar, the quantity in 1916 amounting to 133,651 short tons, or nearly 86 per cent of the total. The average prices per ton received at the mines in 1916 were, gravel \$5.34, lump \$7.94, and ground \$12.38, and the general average price for all spar sold was \$5.92. These prices compare with \$4.89, \$7.51, \$10.80 and \$5.58, respectively, in 1915. At the close of 1916, owing to a shortage in supplies, the price of gravel spar for prompt delivery, not covered by contracts, was about \$21.50 per ton, although it is believed that not much was sold at this price.

Shipments (or sales) of fluorspar were reported from five states in 1916—Illinois, Kentucky, Colorado, New Hampshire and Arizona—in the order named. In 1915 the first four shipped spar and also New Mexico, which reported none in 1916. Probably the output would have been larger in 1916 had not the mines in southern Illinois been shut down for part of July on account of miners' strikes.

The imports of fluorspar in 1916 entered for consumption in the United States were 12,323 short tons, valued at \$54,000, compared with 7167 short tons, valued at \$22,878, in 1915, an increase of nearly 72 per cent in quantity and of about 136 per cent in value. From 1910 the imports of fluorspar steadily declined until 1915, but difficulties in getting supplies from American mines when needed, on account of freight embargoes, lack of cars, uncertainties of transportation on Ohio River, and labor troubles, coupled with higher prices, have led to an extra effort on the part of importers to bring in spar from Great Britain.

## Agrees to Build Plant

Frank A. Cooper, New York City, representing the Superior Iron & Steel Co., has entered into a contract with the City Commission of Superior, Wis., to purchase a site now owned by the city for a proposed iron and steel plant which ultimately will cost \$3,000,000. The contract provides that the company must construct a plant costing not less than \$200,000, work to start by Jan. 1, 1918, and give employment to not less than 60 persons. If the company fulfills the terms of the contract, the lessee is given an option to purchase additional city lands within three years' time, at \$500 an acre. The deed will provide that the company manufacture and sell iron or steel for a period of 10 years.

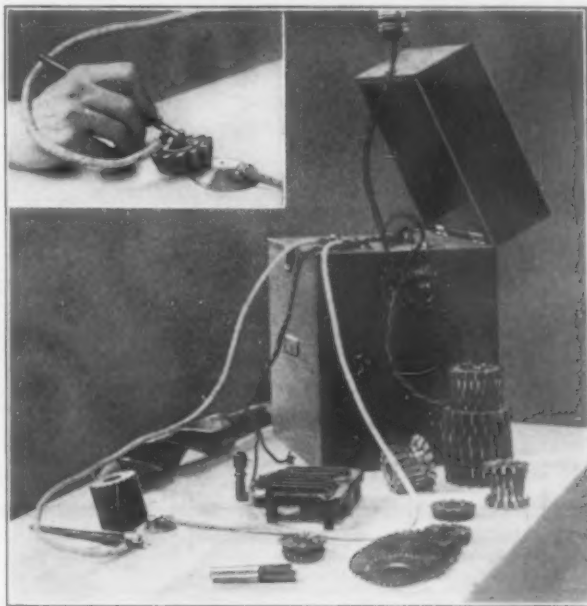
The Industrial Commission of Wisconsin has issued a special report on female labor in positions formerly occupied exclusively by men, in which it is indicated that the employment of women is increasing by leaps and bounds. Machine shops of Wisconsin, it is pointed out, are employing women on an especially large scale. Many large concerns in Milwaukee and elsewhere which have never before hired women, are placing females at light manufacturing operations, where they give splendid satisfaction and show a high degree of skill. One great difficulty in machine shops, the report says, is to procure competent forewomen. The commission is co-operating with employers, not only in obtaining female help, but to make suitable arrangements for their comfort and convenience.

Nine teams have been selected to represent the Lebanon, Reading and Steelton, Pa., plants of the Bethlehem Steel Co. at a first-aid meet to be held at Bethlehem, Pa.

## A New Device for Marking Steel Tools

As a substitute for the older methods of marking steel tools by etching with acid or with a hammer and stamp, William Brewster & Co., 30 Church Street, New York, have brought out a device employing electric current. The Etchograph, as it is known, is intended for marking dies, cutters, etc., the piece to be marked resting on a metal plate which is connected to one side of the circuit, while the marking pencil is connected to the other side. Ease and speed of marking are the advantages claimed. Under the old method the piece to be marked was coated with an asphaltum paint and after this had dried a brush was employed to remove the paint and trace the design that was to be etched. The piece was then immersed in an acid bath, which marked the tool. When the etching process was completed the remaining paint had to be removed and the tool thoroughly cleaned from traces of the acid. All this took time and with the Etchograph all the time that is required, it is explained, is that needed for tracing the design with the marking pencil.

The device includes a transformer which takes current from the nearest lighting socket at 110 volts and steps it down to approximately 5.5 volts. A resistance



The Tool to Be Marked Rests on a Metal Plate Forming One Side of an Electric Circuit and the Design Is Traced by a Pencil Having a Copper Wire Point Which Is Connected to the Other Side

is connected across the terminals of the primary winding of the transformer to vary the amount of current according to the width of line desired. One of the terminals from the secondary winding of the transformer goes to the marking pencil, while the other is connected with the metal plate on which the piece to be marked rests. The pencil consists of a fiber holder with a copper wire point that can be touched up with a file when it becomes dulled and easily removed when it has become too short for use. After the tool to be marked has been placed on the metal plate and the resistance adjusted to give the desired width of line, the pencil is brought into contact with the piece and the marking proceeds as rapidly as it is possible for the operator to trace a design.

It is pointed out that no great amount of skill is required and the amount of current drawn from the line is between 1.5 and 2 amp. When the pencil is lifted at the end of a stroke there is practically no arc to cause a hole to be burned in the metal.

Among the applications of the device are the marking of tools in a shop to discourage unprincipled workmen from stealing and selling them to dealers. Another use to which it may be put is the marking of precision gages, either with the maker's trademark or to indicate their acceptance by Government or other inspectors where marking with a hammer and steel stamp might distort the gages and render them unfit for use.

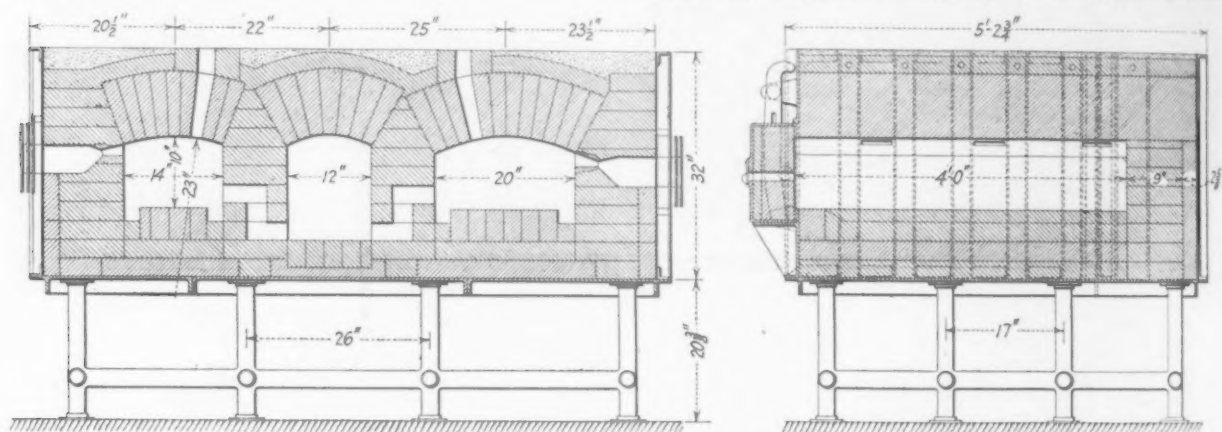


## GAS FIRED WELDING FURNACE

The Surface Combustion Principle Applied to the Utilization of Illuminating Gas

BY CHARLES E. RICHARDSON\*

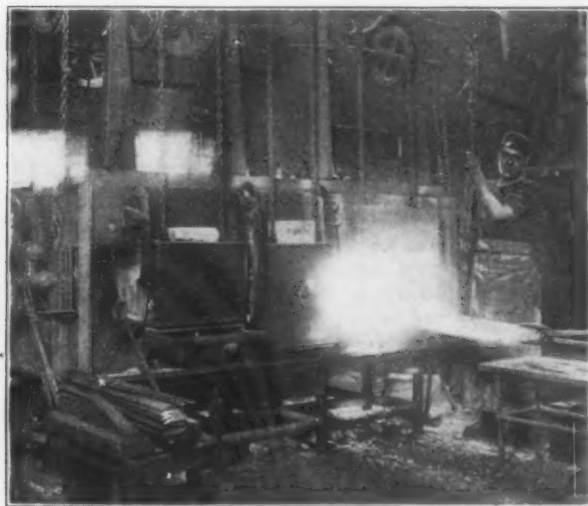
UNTIL recently welding has been considered impossible in furnaces with city gas, the chief deterrent to successful operation being a number of rather vague theories. Probably the most common of these was the belief that the chemical composition of the gas itself in some way rendered it unfit for use as a fuel for welding. It was believed, however, by those designing welding furnaces that welding was produced solely as a result of temperature plus a furnace atmosphere that was slightly reducing at all points. The only relation the chemical composition of the fuel bore to the result, it was considered, was that it must be of such a composition as to yield a gas strong enough to give a flame temperature sufficient to make it possible to secure the temperatures required for welding economically. Bearing in mind that it was readily possible to secure the necessary temperatures and that suitable proportioning and mixing devices could be obtained, the Surface Combustion Co., Long Island City, N. Y., recently installed a welding furnace at the plant of D. Lovejoy & Sons, Lowell, Mass. This furnace is used for the production of machine knives for rotary woodworking cutters and similar machines. The knives consist of a slab of soft steel with a thin layer of tool steel welded on one face.



The Welding Furnace Consists of Two Working Chambers Heated by Gas Burners with a Preheating Chamber Located between That Is Heated by the Flue Gases from the Other Two

The furnace consists of two working chambers, one 32 in. deep and 14 in. wide, and the other 48 in. deep and 20 in. wide, the height of both being 10 in., with

\*Surface Combustion Co., Long Island City, N. Y.



After Being Warmed in the Preheating Chamber a Soft Steel Slab with a Tool Steel Strip on the Upper Face Is Placed in the Working Chamber and Brought to a Welding Heat



From the Furnace the Work Passes under a Power Hammer Where It Is Welded Together

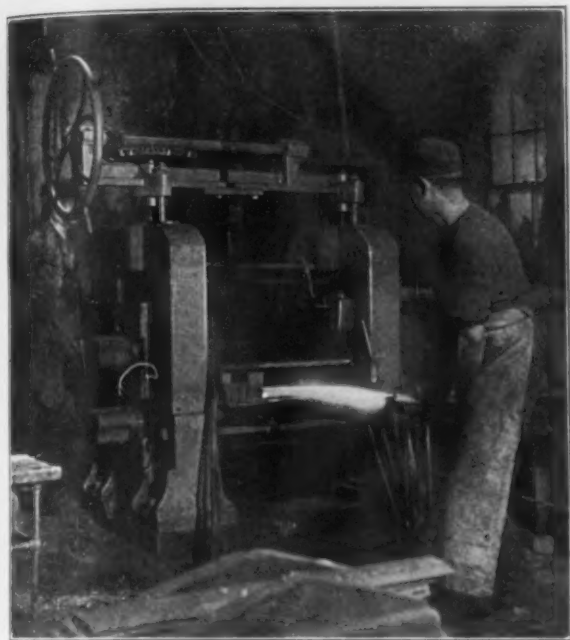
a preheating chamber measuring 48 in. in depth, 12 in. in width and 16 in. in height between them. The working chambers were intended to be used either separately or together, according to the size and amount

of work to be handled, but thus far one chamber has been found sufficient to handle the tonnage required. The furnace is fired with the company's high pressure burners and the quantity and quality of the mixture are regulated by its high pressure control devices. The burners heat the working chambers and the flue gases from them pass into the preheating chamber and out at the rear. The temperature of the working chamber is between 2700 and 2800 deg. Fahr., which gives a temperature of approximately 1800 deg. Fahr. in the preheating chamber.

In operation a pile of eight or ten soft steel slabs, measuring  $1\frac{1}{2} \times 8 \times 34$  in., is placed in the preheating chamber at the beginning of the day's run. When the slabs have been brought to the desired temperature, one of them is removed and the surface sprinkled with borax, after which it is placed in the working chamber. As soon as the temperature of the slab has been raised to between 1900 and 2000 deg. Fahr., it is removed and the scale scraped from the surface. The strips of tool steel are then placed in position so that they are flush with one edge of the soft steel slab and the whole is sprinkled with borax. The piece is then replaced and brought to a welding temperature, after which it is removed and welded under a power hammer. When the welding operation is completed the stock is put through a set of rolls to reduce it to the desired thickness. In a number of cases the piece has to be reheated several times before the welding and rolling operations are completed. After rolling the piece is allowed to

cool, cut to size, hardened, tempered and ground to the finished dimensions.

As the time required for preheating and a number of reheats necessary varies greatly, no definite figures can be given as to the efficiency of the furnace. It has, however, handled 1700 lb. of work in 9 hr. with a consumption of 12,700 cu. ft. of gas, having a heating value of 580 B.t.u. These figures do not, however, represent the capacity of the furnace, but serve to give an indication of the gas consumed per ton of welded stock. They were obtained in a test of the large working chamber and it is possible to at least treble the output.



The Final Stage in the Process Is Rolling the Stock to the Desired Thickness

The installation has been in operation for several months and among the advantages which have been found to result from it are quick heating of the furnace and the work, a cool and clean shop, close control of temperature and furnace atmosphere, continuity of operation and a minimum amount of scale.

### Coal Gas as a Motor Fuel

A development in the use of coal gas for automobiles has passed the experimental stage, according to U. S. Vice Consul H. C. Claibourne of Bradford, England, a motor bus using coal gas having made the journey from London to Eastbourne and return, or 130 miles.

The Grimsby municipality, which operates a system of motor-driven omnibuses to outlying districts, is said, after a trial extending over four months, to have effected a reduction in fuel cost per mile from 4.30d to 1.66d, the price of gasoline being 61c. per gal., and gas 61c. per 1000 ft. The only change made in the motor is the fitting of a butterfly which allows the engine to draw the gas in the correct quantity according to load and speed. It is claimed that an advantage accruing from the use of gas is that the engine is cleaner and the valves do not require grinding so often. The apparatus is relatively cheap and easily adjusted, consisting of a canvas bag with an inner layer of rubber, shaped like a mattress, which holds the gas drawn from the main, and is strapped to the top of the motor omnibus or to the rear of the automobile. The gas in the bag is connected with the induction pipe and the engine is worked by the suction process in the same manner as the ordinary gasoline vapor induction.

The principal disadvantage in the use of coal gas for automobiles is the bulky container necessary for the gas. The use of gas for small cars has proved unsatisfactory by reason of the problem of adequate space for storage. A suitable cylinder for containing compressed gas is said to be necessary for the general use of such fuel for motor cars.

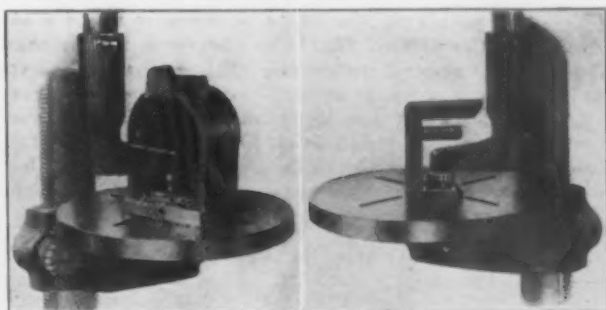
### An Offset Drilling Attachment

To enable holes and bosses located in places which cannot be reached by the usual methods to be drilled, faced and counterbored, the H. E. Harris Engineering Co., Bridgeport, Conn., has developed an attachment for vertical drilling machines. Among the work that can be handled by the attachment are the drilling of screw and oil cup holes in pulley hubs, balancing or lubricating holes in engine crankshafts, the facing of bosses in frames, automobile parts, etc. The attachment is also designed for use in the production of standard munition and automobile parts and machine tools, in railroad and machine shops and also in establishments handling jobbing and contract work.

The attachment consists of a tool holder for the drill, counterbore or milling cutter, an auxiliary spindle into which the holder fits, a square shaft for receiving power from the spindle of the drilling machine and a set of heat treated vanadium steel gears for transmitting power from the drilling machine spindle to the tool holder. In this way the tool holder is driven positively and the tool is held centrally so that it will run true. The auxiliary spindle runs in a hardened and ground tool steel sleeve and the thrust is taken care of by a ball bearing. One holder is furnished with each attachment to which the tool is fitted. When it is necessary to grind or change tools, it is recommended that the holder and tool be removed from the attachment instead of removing the tool from the holder only. This, it is pointed out, can be done easily without disturbing the set-up of the attachment in the drilling machine and the replacing is an equally simple proposition. The attachment can be swiveled around the center of the drilling machine spindle to the most convenient position for performing the work.

For drilling holes in pulley hubs it is pointed out that the use of the attachment does away with weakening of the rim by drilling through it, and in the case of oil cup holes to supply lubrication to bearings, the use of a copper tube to carry the oil from a location where it would be more convenient to drill by ordinary means is done away with. One of the special uses of the attachment is to place an end mill in the attachment on a drilling machine with a compound slide mounted on the table for milling in an inaccessible place which could not be readily reached with an ordinary end or face milling cutter in the milling or profiling machine.

The attachment is made in eight sizes to fit all standard makes and sizes of drilling or similar machines. If, however, there is not room enough for the



Drilling, Facing and Counterboring Holes and Bosses in Out of the Way Places Is Possible with an Offset Attachment for Drilling Machines

regular attachment to be used or a longer extension would prove more desirable, the standard form can be modified to suit the machine or the work in hand and a special attachment supplied.

The National Board of Fire Underwriters, 76 William Street, New York, is mailing to a list of 66,000 manufacturers of the country a booklet, prepared for the Council of National Defense, of directions for the prevention of fire, particularly in plants working under the abnormal conditions of wartime emergency. It has been given the title of "Safeguarding Industry."



# Leaders of Congress Are Again Startled

Secretary of the Treasury Asks for  
Nine Billions More to Meet War Needs  
—Large Loans to the Allies Included

WASHINGTON, August 21.—The leaders of Congress have again been startled by a demand from the Secretary of the Treasury for \$9,000,000,000 to meet the war needs of the current fiscal year ending June 30, next, in addition to the sums already provided. Of this huge amount \$2,000,000,000 or \$3,000,000,000 will be loaned to the Allies with the understanding that the money is to be spent in the United States for the purchase of war material. Mr. McAdoo is insistent that \$4,000,000,000 or \$5,000,000,000 shall be appropriated at the present session and that of this sum at least \$500,000,000 shall be provided by increasing the producing capacity of the pending war revenue bill. The probability that this large amount will be added to the revenue measure by increasing the income and excess profits taxes foreshadows the laying of still heavier burdens on the corporations and developments will therefore be awaited with the liveliest interest by the entire business community.

It is altogether probable that Congress will very promptly comply with the request of the Secretary of the Treasury for the authorization of a big bond issue. That another "liberty loan" would be issued during the coming fall has been understood for some time and recently circumstantial reports have been current to the effect that the new loan would be floated in October and would amount to at least \$3,000,000,000. Legislation for this purpose must originate in the House of Representatives, according to the constitution, and Chairman Kitchin has called a meeting of the Ways and Means Committee for August 25 for the consideration of a bond bill which has already been drafted by the Treasury Department. No amount has yet been written into this skeleton measure, but the rate of interest has been fixed at 4 per cent as against  $3\frac{1}{2}$  per cent for the recently floated "liberty loan" which now, however, will automatically be increased to 4 per cent to keep it on a parity with the new loan. As finally perfected, the bill will authorize the distribution of a specified portion of the proceeds of the loan among the Allies and may contain other provisions with respect to the participation of the allied nations in benefits obtained by the United States in the form of less than market prices on war material. This interesting phase of the matter is under serious consideration in connection with the effort now being made by the War Industries Board to find authority for requiring manufacturers to supply goods to the Allies at the same low prices that have already been conceded to the United States Government.

## Part May Be Postponed

Any part of the \$9,000,000,000 required by the Treasury Department, not provided at the present session, will be authorized in a special measure to be introduced immediately upon the convening of Congress in regular session next December. The purpose of the Congressional leaders in thus dividing the authorization is two-fold: first, to avoid the depressing effect upon the financial community of an immediate demand for \$9,000,000,000, and second, to make it certain that when Congress acts next December it may have before it, the final demand of the Treasury Department and not be placed in the embarrassing position of being obliged to bring forward later on a supplemental budget for the fiscal year 1918. No less than three times during the present session the Treasury Department has sent to the Capitol new estimates of liabilities for this fiscal year and on each occasion the assurance has been given that no more money would be needed before July 1, 1918. The supplemental estimates have proved

decidedly embarrassing, especially in the drafting of the revenue bill, which, as the result of repeated changes, is far from being a symmetrical measure.

As to whether the war revenue bill shall be increased by the addition of another half billion dollars, the Conference Committee to which the measure is about to be sent will decide. Chairman Kitchin of the Ways and Means Committee, who will head the House conferees, is an advocate of heavy taxation to meet the war needs and would favor the raising of a much larger proportion of current revenues by imposts upon the corporations than would Chairman Simmons of the Senate Finance Committee. Mr. Kitchin is in thorough sympathy with the minority members of the Finance Committee led by Senator La Follette, of Wisconsin, who advocates a graduated scale of war profits that would produce not less than \$2,000,000,000 per annum from this source alone. Like Senator La Follette, Mr. Kitchin declares that to advocate lower tax rates at present on war profits with a view to leaving a margin for a later day is to ignore the fact that this prolific source of revenue will automatically disappear with the end of the war and that the opportunity to tax each year's profits passes with the year. Failure to draw upon this source to the fullest extent while the war lasts will therefore result in throwing a much larger burden of taxation upon the people and the normal industries of the country at a time when the easily made war profits will be no longer available and when the business of the country will be staggering under the burden of readjustment.

## Mr. Kitchin's Argument

Mr. Kitchin demands to know why, if it is fair and reasonable to impose a tax of 50 per cent on normal incomes of a certain size as is proposed in the Senate bill, should there be any hesitation in applying a flat 50 per cent tax or even a 70 per cent tax on excessive war profits. Mr. Kitchin and Senator La Follette also make the specious plea that neither the war profits tax nor the income tax affects the amount of existing capital and therefore neither is in any sense "a burden on industry." Both of these taxes are levied, it is claimed, upon extraordinary and unusual profits and, even if they absorbed the greater part of the profits of individuals or corporations, such taxes would not in any way affect the income of the next year. These taxes, it is asserted, do not impair the earning power of capital, which will continue without regard to taxes limited to profits and in the case of the war profits tax, even if it were fixed at a rate of 100 per cent, the normal profits would be left untouched.

This is the reason, Senator La Follette says, why the conservative British Finance Minister does not hesitate to impose a rate of 80 per cent on war profits without fear of any ill effect so far as further revenue from the same source is concerned. Both Mr. Kitchin and Senator La Follette also demand that both income and excess profits taxes for the war period shall be fixed in the pending bill "otherwise any attempt to revise the rates upward in the next few months, as will be necessary if this bill in its present form becomes a law, will be denounced as retroactive taxation, which has been so ably criticized and condemned in the report of the majority of the Senate Finance Committee." On the basis of the war profits obtained by American corporations in the calendar year 1916, it is estimated that a flat 80 per cent tax would produce \$2,300,000,000 and a larger amount if based on the earnings of the calendar year 1917. A 70 per cent tax on the earnings of 1916 would net \$2,021,000,000; a 60 per



cent rate would produce \$1,732,500,000, and a 50 per cent rate \$1,443,700,000.

### An Interesting Table

In this connection, Treasury experts, at the instance of the Finance Committee, have compiled some interesting figures with regard to the earnings of the principal manufacturing corporations of the country and the taxes that would be paid thereon at the rates provided by the revenue bill as revised by the Finance Committee. These figures show net income for 1916, the average income for the pre-war period including the calendar years 1911, 1912 and 1913, the 6 per cent corporate income tax and the excess war profits tax as

### Low Carbon Ferromanganese

Ferromanganese as low in carbon as 1 per cent is claimed to be commercially possible by Ernest Humbert, Niagara Falls, N. Y., in a patent (U. S. 1,228,925—June 5, 1917) he has taken out. The reduction of the carbon is effected by treating commercial ferromanganese containing up to 6 per cent of carbon with manganese oxide. An electric furnace of the Heroult type is used. An example of the process is given as follows:

Take 2000 lb. of ferromanganese containing 6 per cent carbon. This is 120 lb. of carbon and requires 160 lb. of oxygen. This amount of oxygen will be found in 710 lb. of manganese oxide (MnO<sub>2</sub>). If the reaction were perfect there would result 2000—120+550, a total of

Estimated Taxes of Leading Corporations

Name of Corporation	Net Income, 1916	6 Per Cent Corporate Income Tax	Average Income Pre-war Period	Tax on War Profits
Allis-Chalmers Mfg. Co.	\$3,165,020	\$189,901	\$755,125	\$881,377
American Can Co.	7,962,981	477,779	5,195,003	2,767,978
American Car & Foundry Co.	2,816,018	168,961	3,467,538	168,261
American Locomotive Co.	10,769,429	646,166	3,872,807	1,970,534
American Smelting & Refining Co.	22,152,250	1,329,135	9,060,396	3,117,867
American Steel Foundries	3,418,057	205,083	517,439	1,228,591
American Zinc, Lead & Smelting Co.	9,307,968	558,478	197,384	4,470,713
Anaconda Copper Mining Co.	58,892,980	3,533,579	11,741,185	18,544,799
Atlas Powder Co.	2,939,789	176,387	322,837	1,170,141
Baldwin Locomotive Works	2,619,246	157,168	3,653,287	.....
Bethlehem Steel Corporation	43,593,968	2,615,638	3,075,108	18,941,746
Butte & Superior Mining Co.	8,873,446	532,407	942,988	3,561,159
Calumet & Arizona Mining Co.	11,155,004	669,300	2,966,934	2,822,705
Colorado Fuel & Iron Co.	2,201,170	132,070	1,596,031	95,491
Continental Can Co. (Inc.)	2,143,554	128,613	788,016	381,854
Wm. Cramp & Sons Ship & Engine Building Co.	1,087,704	65,262	173,651	382,618
Crucible Steel Co. of America	13,223,656	797,419	3,629,467	3,241,869
E. I. Du Pont de Nemours & Co.	82,107,693	4,926,462	5,525,964	35,922,989
Federal Mining & Smelting Co.	868,198	52,092	942,186	.....
General Motors Corporation	28,789,560	1,727,374	4,557,338	10,163,293
Great Northern Iron Ore Properties	2,088,884	125,333	2,060,322	3,427
Greene-Cananea Copper Co.	3,435,879	206,153	1,407,902	528,777
Hercules Powder Co.	16,658,873	999,522	1,017,212	7,384,956
International Harvester Co.	5,137,098	308,226	7,155,253	.....
International Nickel Co.	13,557,970	813,478	4,125,955	2,992,179
International Mercantile Marine Co.	26,299,596	1,697,976	1,608,166	12,158,007
Lackawanna Steel Co.	12,218,234	733,094	1,282,500	4,918,317
Maxwell Motor Co.	5,426,636	325,598	.....	.....
Miami Copper Co.	7,759,784	465,587	1,296,602	2,675,997
National Enameling & Stamping Co.	1,917,803	115,068	728,932	327,196
Nevada Consolidated Copper Co.	15,002,051	900,123	3,419,266	4,326,237
New York Air Brake Co.	8,214,962	492,898	424,897	3,712,965
Nipissing Mines Co.	1,805,243	108,315	1,799,298	713
Phelps, Dodge & Co.	21,974,263	1,318,456	7,442,399	4,298,217
Pittsburgh Coal Co.	3,143,927	188,636	2,047,896	190,043
Pittsburgh Steel Co.	4,564,067	273,844	1,191,855	1,175,400
Pressed Steel Car Co.	2,751,152	165,069	1,412,665	290,653
Rayway Steel Spring Co.	3,710,805	222,648	1,276,808	713,771
Ray Consolidated Copper Co.	11,716,428	702,986	1,634,365	4,340,711
Republic Iron & Steel Co.	14,789,162	887,350	2,265,694	5,290,887
Shattuck Arizona Copper Co.	3,039,077	182,345	1,923,573	542,426
Sloss-Sheffield Iron & Steel Co.	1,990,674	119,440	545,457	488,881
Studebaker Corporation	8,611,245	516,675	2,184,383	2,277,848
Tennessee Copper Co.	387,658	23,259	793,209	.....
U. S. Cast Iron Pipe & Foundry Co.	1,308,641	78,518	525,591	206,564
U. S. Smelting, Refining & Mining Co.	8,898,464	533,908	3,552,988	1,413,157
U. S. Steel Corporation	271,531,730	16,291,904	63,585,777	76,726,472
Virginia Iron, Coal & Coke Co.	.....	.....	.....	.....
Utah Copper Co.	39,738,675	2,384,321	7,733,435	12,688,844
Westinghouse Air Brake Co.	9,585,928	575,156	3,934,661	1,472,339
Westinghouse Electric & Mfg. Co.	18,079,889	1,084,793	3,581,966	5,714,089
Willys-Overland Co.	10,884,383	653,063	5,653,899	1,125,313

\*Net income 1916 less than during pre-war period.

†Not available.

‡Deficits in 1916 and during the pre-war period.

applied to the 1916 incomes. The accompanying table presents these figures for those corporations of special interest to the readers of THE IRON AGE.

It is pointed out by members of the Senate Finance Committee that the actual taxes to be paid by the corporations in the list on incomes received during 1917 will be very much larger than the returns figured on the basis of 1916 incomes. This is due, first, to the fact that in nearly all cases the 1917 incomes will be greater than last year, and second, to the application of the higher brackets of the graduated excess profits tax authorized by the pending bill. In the case of the United States Steel Corporation, for example, the 6 per cent corporate income tax, if paid on earnings of approximately \$400,000,000 in 1917, will amount to \$24,000,000 instead of \$16,291,904, while the war profits tax for the earnings of 1917 in excess of those of 1916, being levied under the terms of Section 200 of the pending bill on a 50 per cent basis, will increase this impost by approximately \$64,000,000, making a total tax on war profits of \$140,000,000. Adding the 6 per cent corporate income tax for 1917, the total levy under the pending bill upon the Steel Corporation would be not far from \$165,000,000.

W. L. C.

2430 lb. of ferromanganese containing no carbon. These calculations are for pure oxide of manganese. As commercial manganese ore is never pure MnO<sub>2</sub>, the calculations must be made on the MnO content. Also a certain excess of the oxide must be used, about 10 to 20 per cent over the theoretical amount, because a certain amount of the oxide remains in the slag. The ferromanganese is introduced into the furnace either cold or molten. If cold it is first melted in the electric furnace. The manganese oxide is then added. Probably the best voltage to use is 50 volts at each arc, but it may be varied according to the design of the furnace and other considerations. The quantity of current, amperes, should be sufficient to keep the mass at the temperatures stated. A test of the metal will show a reduction of carbon by the appearance of the fracture, being less crystalline and more like steel than in high-carbon ferromanganese. Also the specimen will be less brittle the lower the carbon.

The low-carbon ferromanganese produced by this method is stated to be of special use in the making of manganese steel containing a comparatively high percentage of manganese, ordinarily from 10 to 15 per cent.

## FOUR PLANTS TO FORGE GUNS

### Government Has Worked Out Plans for Adding to Ordnance Production of the Country

Plans of the Ordnance Department of the United States Army to increase the number of ordnance plants in the United States have finally been worked out in such a way as to insure the production of a sufficient number of guns, from 3 in. to 9.5 in., to supply our army in France.

In addition to the Tacony Ordnance Corporation, mentioned in THE IRON AGE last week, which was formed by the Tacony Steel Co., and will build a \$1,500,000 plant at Tacony, Pa., it now develops that three other concerns, the Heppenstall Forge & Knife Co., Pittsburgh, the Buckeye Steel Castings Co., Columbus, Ohio, and the Standard Steel Castings Co., Cleveland, will forge guns, also. The Heppenstall company is building a new plant in Pittsburgh for the purpose, while the Buckeye and Standard companies are building additions to their plants, which will be completed soon. This work has been conducted so quietly that few outside of the War Department have known of these preparations.

The guns forged in these four plants will be shipped to other concerns, which have been recently formed, where the machining will be done, after which the guns will probably go back to the forge plants for heat treatment. Some of the concerns which are building plants for machining guns are as follows: The Symington-Anderson Co., Rochester, N. Y.; the American Brake Shoe & Foundry Co., Erie, Pa.; the Wisconsin Gun Co., Milwaukee, Wis.; the Northwestern Ordnance Co., Madison, Wis.; the Inland Ordnance Co., Bedford, Ohio; the

Bullard Machine Tool Co., Bridgeport, Conn., and the American Radiator Co., Bayonne, N. J.

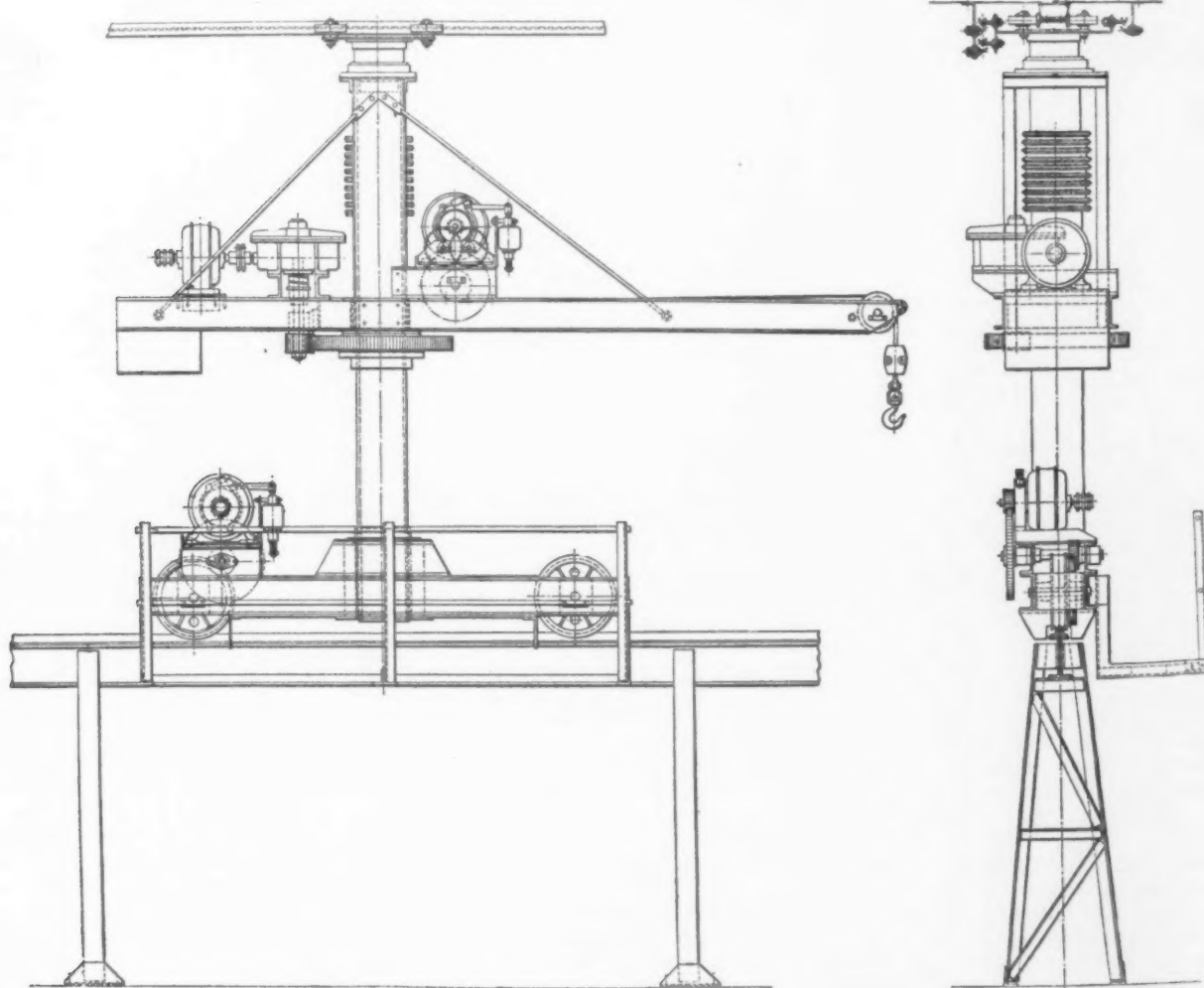
Before these arrangements were made it is understood that only two concerns in the United States were in a position to turn out heavy guns on a large scale, these being the Bethlehem Steel Co. and the Midvale Steel Co. The Government arsenals and navy yards also did such work, but their capacity, of course, was not sufficient to provide all of the guns that the United States Army will need.

## SHELL HANDLING EQUIPMENT

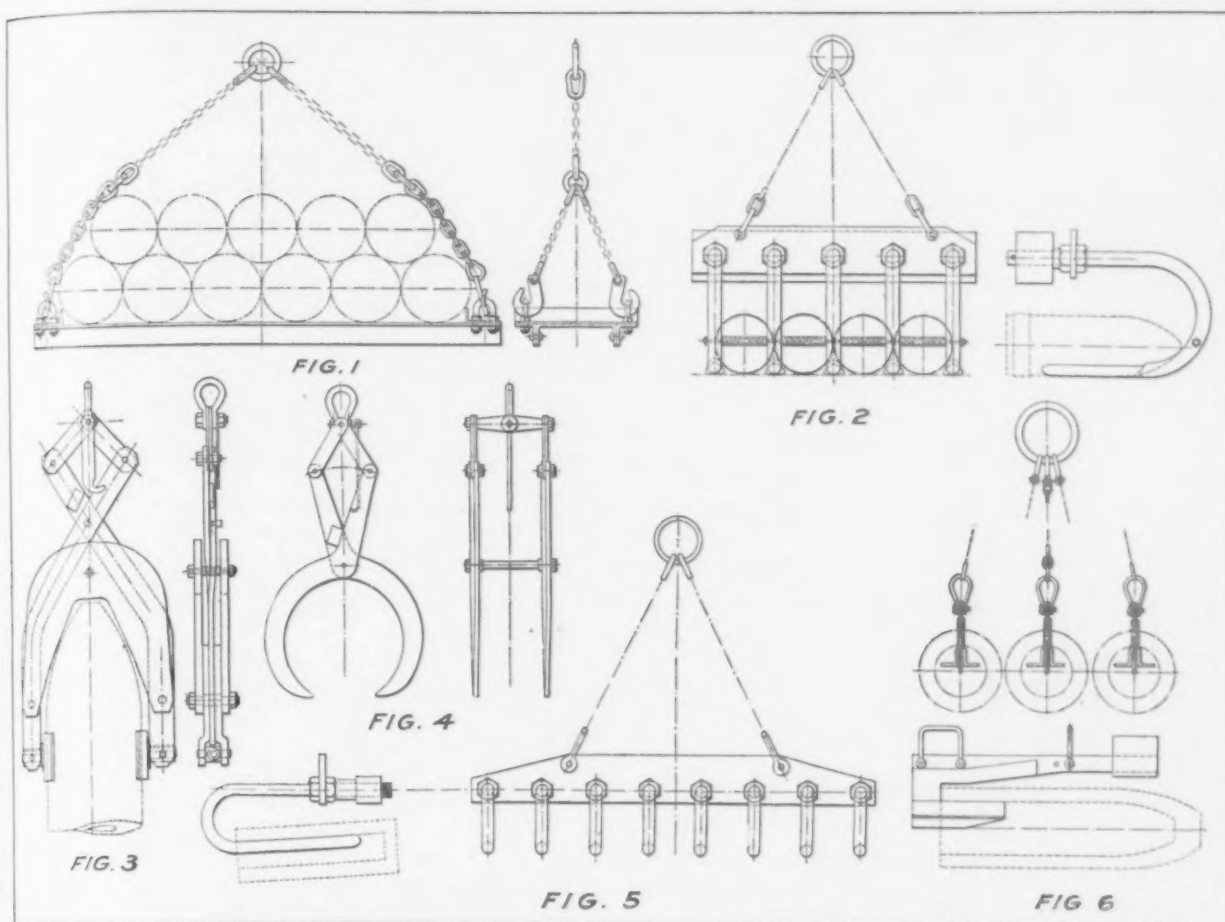
### Interesting Traveling Cranes and Accessories Installed in a British Factory

A SOMEWHAT novel type of traveling crane and lifting fixtures have been supplied by Babcock & Wilcox, Ltd., London, to a large British munitions plant turning out heavy shells. The equipment is described at some length in a recent issue of *Engineering*, from which the accompanying illustrations were taken.

The machine shop in which the equipment was installed consists of two bays, each measuring approximately 50 ft. in width and 400 ft. in length. Two rows of machines are located in each bay, together with two traveling cranes. The latter, which are employed for lifting and transporting the forgings and the shells in various stages of their manufacture, are of the mono-rail type. They travel on a single rail riveted to an I-beam forming the top of the supporting A-frame, and are prevented from tipping over by two pairs of rollers at the top of the crane column which bear against a structural shape fastened to the roof of the shop. Each crane has a jib with a 10½-ft. radius, which is



The Traveling Crane for Lifting and Transporting the Forgings and the Shells Runs on a Single Track on Top of an A-Frame and Is Prevented from Tipping Over by Two Sets of Rollers at the Top of the Crane Column Which Bear Against a Structural Shape Fastened to the Roof



Some of the Various Lifting Fixtures Employed in Connection with the Cranes

long enough to extend to the center line of each row of machines served, the cranes passing between the driving shafts and the pulleys. The maximum load for which the cranes are designed is 1500 lb. The top of the A-frame is approximately 7 ft. above the floor and the space underneath is utilized for storing shells and blanks. The cranes have separate electric motors for lifting, slewing and traveling, and are controlled from the small attendant's platform. The motors are of the slip-ring type, designed for operation on a three-phase, 25-cycle, 440-volt circuit. The power for the hoisting and traveling motions is transmitted by ordinary spur gears and magnetic brakes of the customary type are provided. In connection with the slewing motors, worm reduction gearing is employed. The worm runs in an oil bath and a friction clutch is provided to take up any shock which may result from sudden starting or stopping.

A number of lifting fixtures have been designed and built to facilitate the handling of the shells and billets. The rough forgings are carried on a cradle made of inverted channel irons, as shown in Fig. 1. This cradle is fitted with chain slings and will carry 11 shells of the 12-in. size. For lifting heavy shells from the floor and turning them into a vertical position, a special type of gripping device has been designed. As will be noticed from Fig. 3, it consists of two heavy cross-heads fitted with levers, which are relied upon to give a powerful grip on the shell. The gripping parts, which are lined with friction material to reduce the likelihood of slip, are pivoted on the ends of the levers, an arrangement which permits the shell to swing into the vertical position.

For lifting four finished shells from the floor the fixture shown in Fig. 2 was supplied, the prongs passing between an adjacent pair of shells, each of which is supported by two of the prongs. After the billets have been forged they are lifted by the fixture illustrated in Fig. 5. For handling shells at other stages of manufacture the fixture illustrated in Fig. 6 has been devised, the way in which both are employed being obvious. For lifting large shells the double prongs illustrated in Fig. 4 are used.

### A New Bearing Metal Alloy

What is claimed to be an improved metal alloy has been patented (U. S. 1,223,001—April 17, 1917) by Henry K. Sandell, of Chicago. The alloy consists of copper and antimony, in substantially the proportion of two parts by weight of the former to one of the latter, together with a small proportion of lead, and preferably in addition thereto a percentage of nickel. In general it appears that the antimony possesses the property of crystallizing the copper, thereby greatly increasing the hardness of the alloy and lowering the frictional resistance. The nickel toughens the alloy by binding together the highly crystalline mass, thus increasing the tensile strength and preventing disintegration under abrasive action. A typical alloy for supporting the steel shaft of a 10-kw. dynamo running 1800 r.p.m., would be, in parts of metal used, copper 4, antimony 2, lead 1 and nickel 1. It is claimed that alloys of this type will permit a bearing to run for an indefinite period without lubrication and without showing substantial wear. The alloy shows no overheating tendency, does not itself score or score the shaft and is in all respects satisfactory for use as a bearing-bushing operating under sliding friction, either without lubrication or with very little lubrication at moderate bearing pressure and high speeds.

The employees of the American Tool Works Company, Cincinnati, held their annual picnic at Highland Grove, Aug. 18. About 3500 employees and their friends attended the outing, which was arranged by President J. B. Doan and General Superintendent A. E. Robinson. A number of athletic contests between the different shop departments took place.

Work on the railroad yards for the Philadelphia & Reading Railway Co. near Bethlehem, Pa., has been started by C. P. Bower, contractor, Philadelphia. The estimated cost of the construction work is \$900,000. Complete plans are being made for a large engine house to be built in connection with the yards, at a cost of \$300,000.



## A CASE OF MAN HANDLING

How Hostility to the Management Was Changed to an Attitude of Devotion

BY FREDERIC MERON\*

A factory located "somewhere in Europe" and manufacturing an article of general use was able to make huge profits, having patent protection. Gradually the success of the company stimulated the inventive spirit of specialists in other countries. Modern factories well equipped were installed. The company first mentioned lost prestige and customers little by little. Then to retain them prices were reduced, but things continued to move adversely and the company lost every year more and more money. Instead of attempting then to modernize equipment and to introduce new working methods, it decided to reduce salaries and wages. The result was that the better employees left, and the old men, inexperienced boys and the "good-for-nothings" who remained did not lose sight of the company's policy. They showed their mood in a most expressive and expensive manner. Not only carelessness but sabotage occurred daily. Bribery in the purchasing department developed; stealing of materials from the storeroom occurred and imaginary names were entered on the payroll. When the company was near bankruptcy it was decided to engage a new manager.

The new man found that wastes of every kind were to be seen everywhere in the shops. These were due to incapacity of workmen, lack of practice in precision work and the lack of proper raw materials as well as to sabotage. After a while he succeeded in eliminating the drawbacks as far as the machines, purchasing department, etc., were concerned, but he had yet to contend with the resistance of the workmen.

He first decided to verify for himself at least once a day the output of each workman not as to quantity but simply as to quality. In making the rounds he was always accompanied by the foreman and the superintendents of the various shops. He took care on these occasions to resort to no punitive measures for blameworthy acts, for he would have made everybody his enemy, the management as well as the workmen, as the latter would have lost no opportunity to complain of him to the owners.

### Awarding Bonus for Quality Work

After some reflection, he decided to give bonuses for good workmanship. As the manner of giving is more important than the thing given, he proceeded in the following manner: Every time in verifying work he found that it was well done he took pains to compliment the workman, and made out for him on the spot before all the others, a slip of paper or certificate on which he wrote the amount for which it was good, the date granted, the workman's number and the fact that the bonus was for superior workmanship. In giving this in a conspicuous way he was always careful to add, "You can cash this bonus from me in eight days."

By this means the workman was obliged to carry the certificate around with him for several days. Thus he would naturally show it to everybody, as a proof of his superiority justly recognized by his chief; and far from criticizing his new manager he advertised his good qualities. The interest of the workman counseled him to do this, for by praising the new manager he added also to his own reputation.

The method succeeded even better than was hoped. The men became interested in their work and tried to see who could excel. They would even stop the new manager as he went through the shops and ask him not to forget on his next rounds to inspect their jobs. Although there were about 500 workmen employed the total amount of these certificates did not exceed \$50 per month, and once his daily rounds came not merely to be tolerated but to be looked forward to, he dared

now and then to criticize both quality and quantity. The manner of going about a task is often of the greatest importance.

### German War Profits

The Hahn Tube Works, at Berlin and Grossenbaum, last year earned net profits amounting to 2,754,435 marks, against 1,445,258 marks for the previous year; the shareholders obtain a dividend of 16 per cent and an additional bonus of 600,000 marks, or another 8 per cent. As the capital, however, is not fully paid-up, the dividend in reality amounts to 30 per cent.

The Rhenish Lignite & Briquette Co., Cologne, has a surplus for last year of 11,995,274 marks, against 7,605,567 marks for the previous year. Writings-off have risen from 2,532,717 marks in the previous year to 3,814,810 marks for last year, and the dividend has been fixed at 12 per cent, against 10 per cent for the previous year.

The United Cologne-Rottweiler Powder Companies had during last year a turnover which exceeded the highest peace figure 10 or 12 times. With the heavy writings-off and the cautious financial policy adopted by the concern, the dividend was restricted to 20 per cent.

The German Cast Steel & Machine Co. at Schweinfurt paid a dividend of 25 per cent for last year, and the Frankfort Machine Mfg. Co. 20 per cent, although a higher dividend was asked for. The company has so far reserved 3,200,000 marks for war profit taxation and 350,000 marks for alterations necessitated by the return of peace. The foregoing is taken from *Engineering*.

### Shipbuilding in Canada

The following concerns in Canada are reported to be engaged in building steel ships: Canadian Vickers, Ltd., Montreal; Collingwood Shipbuilding Co., Collingwood, Ont.; J. Coughlan & Sons, Vancouver, B. C.; Midland Drydock Co., Midland, Ont.; Nova Scotia Steel & Coal Co., New Glasgow, N. S.; Polson Iron Works, Toronto, Ont.; Port Arthur Shipbuilding Co., Port Arthur, Ont.; Wallace Shipyards, Ltd., North Vancouver, B. C. These concerns are reported to have contracts for wooden ships: Cameron-Genoa Shipbuilders, Ltd., Victoria, B. C.; the Foundation Co., Victoria, B. C.; Grant & Horne, St. John, N. B.; Lyall Shipbuilding Co., North Vancouver, B. C.; Pacific Construction Co., Coquitlam, B. C.; Quinlan & Robertson, Ltd., Montreal, Que.; St. John Shipbuilding Co., St. John, N. B.; D. A. Saker, St. John, N. B.; Thunder Bay Contracting Co., Fort William, Ont.; Toronto Shipbuilding Co., Ltd., Toronto, Ont.; New Westminster Construction & Engineering Co., Ltd., New Westminster, B. C.; Western Canada Shipyards, Ltd., Vancouver, B. C.

### Gisholt Machine Co. Will Do Full Share

It is authoritatively stated that while the principals of the Gisholt Machine Co., Madison, Wis., hold the control of the Northwestern Ordnance Co., also of Madison, their interest in this company will in no way interfere with the usual, and even enlarged, output of the regular products of the Gisholt company—turret lathes, boring mills, grinding machines, small tools, peridigraphs, etc. The Northwestern Ordnance Co. has in course of construction an entirely independent plant and will operate with an entirely separate organization. The Gisholt Machine Co. will continue free and unhampered to do its full share in supplying machine tools which will be needed, like the products of other machine-tool builders, in the manufacture of war materials and for industrial use. Although, as stated, the ordnance company is a separate enterprise, there has been some misapprehension on the subject.

The sale, purchase, hiring or loan or even sending on approval of a new or second-hand machine tool is not allowed under the defense of the realm acts and regulations of Great Britain without the permission in writing of the ministry of munitions.

\*Formerly Frederic Schreiberman, consulting management engineer, name having been changed by court decree.

### A 25-In. Vertical Drilling Machine

The Silver Mfg. Co., Salem, Ohio, has recently added a 25-in. size to its line of vertical drilling machines. The construction follows in general the conventional design for machine tools of this class. The back gears are fully inclosed in the upper cone pulley and are engaged by a conveniently located lever and the sensitiveness of the spindle counterbalance is controlled by a notched lever and chain.

The spindle is of crucible steel with a ball thrust bearing and, together with the sleeve in which it runs, is finished by grinding. The counterbalance weight for the spindle and the sliding head is located inside the column, and a chain connects it with a notched lever, the function of which is to vary the sensitiveness of the counterbalance as conditions may require by changing the position of the chain on the lever. The bearing of the sliding head on the column is large. The head is rigidly secured to the column and it is pointed out can be readily adjusted on account of its balance. Two quick-return levers are provided, the one at the right sliding back and forth in its bearing. When this lever is withdrawn to its full length it can be employed for hand drilling in light work.

Eight spindle speeds, ranging from 14 to 315 r.p.m., are available. Four of these are secured with the ordinary open belt drive and the remainder by the back gears, which are fully inclosed in the upper cone pulley. The feed, which is of the positive geared type, has six changes ranging from 0.0056 to 0.0310 in. per revolu-

tion of the spindle. Any of these rates can be obtained while the machine is running, and to enable holes to be drilled to any desired depth an automatic stop is provided. This is set by graduations on the spindle and can be thrown out by hand if necessary before the depth for which it is set has been reached.

The frame is of rigid construction and is bolted to the base. The swinging table is of rigid construction and the supporting arm has a wide bearing on the column. The table, which is 21¼ in. in diameter, has a vertical adjustment of 16 in. through a screw and bevel gear arrangement.

The tapping attachment consists of four bevel gears, an intermediate pinion and two positive clutches. When the attachment is not in use the intermediate pinion, which is mounted on the eccentric, is thrown out of engagement.

### Alterations in British Steel Sections

The question of alterations or additions to the existing list of British standard steel sections received further attention from steel makers at a meeting in London recently. Some time ago, Sir John Cowan of Redpath, Brown & Co., Ltd., addressing the Engineering Standards Committee, recommended that various sections should be made to metric dimensions. The result of recent conferences is that steel makers see no present need to prepare rolls for sections designed in metric dimensions. They state, however, that if engineers will design a series of scientific sections, they will study the test and if there are no practical difficulties in rolling, they will prepare rolls to produce the sections desired.

John H. Skelton of H. J. Skelton & Co. urged that the steel makers' point of view should be considered and adopted by engineers, adding that there were already too many British standard sections. He stated that the unit capacity of steel production in Great Britain is too low to permit the maximum efficiency in cost. There are many steel works which have only two rolling mills and which ought not to be expected to produce the whole list of British standard sections. The steel makers would be driven to arrange among themselves an allocation of orders for different sections if they were to produce steel shapes at minimum cost and without incessant change of rolls. He considered that great advances in knowledge and practice of steel making had been made in Great Britain during the past three years.

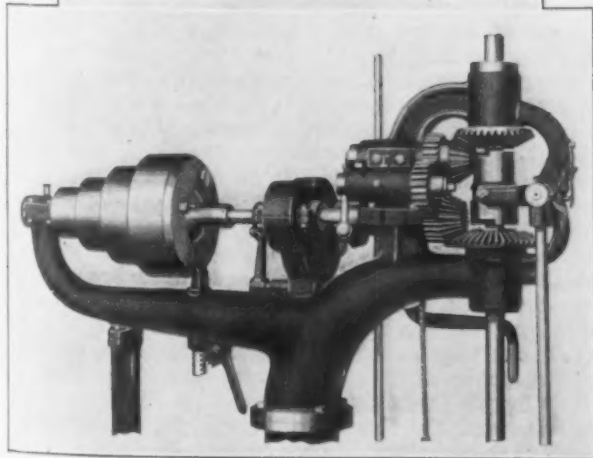
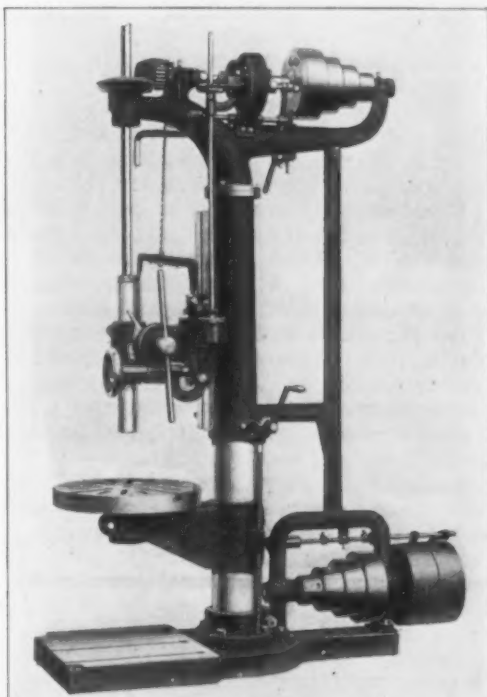
Mr. Ennis of Dorman, Long & Co., Ltd., explained the difficulties of producing some of the shapes by reason of higher speed of rolling mills in some competing countries. Sir Archibald Denny is to bring the whole matter before the Shipbuilding Steel Committee.

### High Speed Steel Without Tungsten

A tool steel stated to be equal in durability and hardness to high-speed steel, yet of which tungsten is not a component, is announced in *Engineering*, of London. It has been brought out by Darwin & Milner, Sheffield, under the trade name, "Cobaltcrom." About twelve months ago the head of the firm, by adding cobalt to chromium-carbon steel, converted a product which had no appreciable red-cutting hardness into one which had this qualification.

It is stated that the maximum temperature for hardening the new steel is 1000 deg. C.; also, that hardening in practically all applications is satisfactory when the tool is allowed to cool naturally in still air free from drafts.

There is a scarcity of toluol for making high explosives, and the chemical committee of the Council of National Defense is taking steps to have the gas supply of large cities stripped of this by-product. This will change the nature of gas to some extent, but it will be treated in other ways to maintain a satisfactory illuminating standard. Gas consumers in cities will have to become accustomed to a different kind of gas. Toluol is used in making trinitrotoluol, one of the most valuable high explosives.



The Use of a Notched Lever Enables the Sensitiveness of the Spindle Counterbalance to Be Adjusted to Suit Operating Conditions and the Intermediate Pinion of the Tapping Attachment Is Mounted on an Eccentric to Facilitate Disengagement When the Attachment Is Not in Use



# The Alien and the Industrial Worker

Some of the Effects of War—Strife Creates  
a Kindlier Feeling for Men of Other Lands—  
Summary of Requirements for Americanization

—BY WINTHROP TALBOT, M.D.\*—

THE war affects the employment of aliens in America in a somewhat peculiar way, and it is important to any thoughtful manager to realize that every alien's ability to work is affected materially by the war. What these ways may be it is our present duty to inquire and we show the deepest human sympathy and evince the greatest kindliness if we make our analysis so far as possible free from sentimental sympathies. We can do our best to be of service to our foreign brethren if we handle the problem of management not in the spirit of mere welfare, but of sound business reasoning.

One of the most evident lessons of the war is that strife cements friendship and creates fraternal feeling. It is probably true that never has there been a kindlier feeling among employers for aliens in our country than now, for on the one hand we are really trying to understand more about the peoples with whom we are allied, such as the Russians, the Roumanians, the Serbians, the Italians, the Portuguese, the Japanese, the French, the Belgians and the English, for we are working for and with them, while as for neutral countries, Norway, Sweden, Spain and Greece, it is so short a time since we ourselves were vainly attempting neutrality and were suffering the sorry consequences that we can sympathize and do sympathize intelligently with them. As for Austrians, Bulgarians, Turks and Greeks with whom we are technically not at war and with the Germans against whose government all our forces are now being focused, we can have only a feeling of compassion, realizing that they represent the passing of autocratic government. So for the workers in our industrial plants coming from these countries our feelings are similar, and in the endeavor to understand we are drawn into a closer brotherhood of feeling. If in the past, wrapped up in the selfishness engendered by the arts of peace, we have been indifferent and neglectful of the human rights of aliens, we must make it our business now in the pursuit of the science of war to adopt a kindlier and more intelligent study of our alien brothers in a more helpful spirit, if we wish to strengthen them—and by strengthening them insure ourselves. War has ever been the demolisher of selfishness. In war it can never be "Every man for himself and the devil take the hindmost," rather must it be "Each for all and all for each."

## Results of Mismanagement

Short-sighted management in Hopewell, Va., built a huge powder works and utterly neglected the human side. It created social conditions worse than ever existed in Goldfield or earlier in Leadville, or any of the wild mining centers of the West, with the result that Hopewell is wiped out of existence by fire. Colorado became a byword and a reproach so long as the alien human element was neglected. Its wasteful management has had to be revolutionized. We could say the same of Lawrence, the West Virginia coal fields, Roosevelt, Bayonne, and dozens of other alien centers where management has never sensed the fact that industry may never be divorced from home, that industrial concerns are responsible and by the public will be held responsible more and more, where they fail to take their share in establishing right standards in the civic communities which cluster around them. Bayonne, N. J., has one saloon for every eight adult male workers. In the neighborhood of a great plant in Stamford, Conn., cluster scores of rum shops. Bridgeport, Conn., is infested with these places. The same may be said of the majority of industrial centers in the

North, and yet I venture to believe that the saloonkeeper has been a better friend to the alien than his employer. For employing concerns have had the power to make civic conditions right and have failed to make the effort, while the saloonkeeper has done much to ameliorate and palliate the alien's social isolation and economic hardships. The saloonkeeper has been the alien's banker, adviser and friend. He has obtained employment for him when out of work. He has given him help in sickness, he has buried the alien's dead babies. The saloon has been the alien's social center, a place of warmth and light and human companionship—his club. Why? Because the industrial manager, the natural leader of labor, has been blind to his opportunity, his privilege and his duty. His duty, and, may we say it, his largest material gain.

## Alien Working Power

Now what is the actual status with regard to alien working power as affected by this indifference of industrial managers to civic conditions? First, with regard to health. If a workman is ill or not in good health industry suffers. Examination of alien employees in large numbers has demonstrated absolutely that a large percentage of aliens are far below normal in working power because of avoidable disorders. We must realize that most illness among workers is avoidable and can be prevented through proper industrial civic administration. It is the industries which pay the taxes, it is the industrial taxes which mainly support municipal administration; municipal administration is responsible for clean streets, proper sewage, pure water supply, smoke prevention, removal of garbage, isolation of contagious disease, inspection of slaughter houses, restaurants, and the whole matter of clean food and food adulteration. On all these things the health of the individual largely depends. If the civic administration fails where industrial corporations are large taxpayers, does not the responsibility for failure rest on the shoulders of the industrial manager?

What has been said with regard to health applies with equal force to cost of living. The industrial manager being of necessity the natural industrial leader, however he has played his part in the past, is again responsible if American industrial communities have been lacking in living conveniences for the benefit of all such as municipal bakeries, laundries, markets, cold storage facilities, such as are widely provided and fostered in industrial communities abroad by industrial concerns.

Recreation, too, is another matter of vital moment to every community and to alien people used to singing, dancing and joyous doings in their own countries, the lack of harmless pleasures is perhaps the keenest deprivation they could suffer. Fortunately now the playground and community center movements are well under headway, but to every industrial concern it should be merely a matter of business thrift to contribute effectively to the establishment and maintenance of such wholesome community activities—activities without which an actual premium is placed upon immorality, vice and crime. Public baths and swimming pools, athletic grounds, gymnasium are all civic essentials in which industrial management should take active interest.

The public schools and library have been kept at arm's length by industrial managers. The school authorities and the library authorities have long stood ready to co-operate, but industry has held aloof.

We must take off our hats to German industrial insight as we realize the intimate relations existing between industry in Germany and the schools. We have good reason, and England, France, Belgium, Serbia

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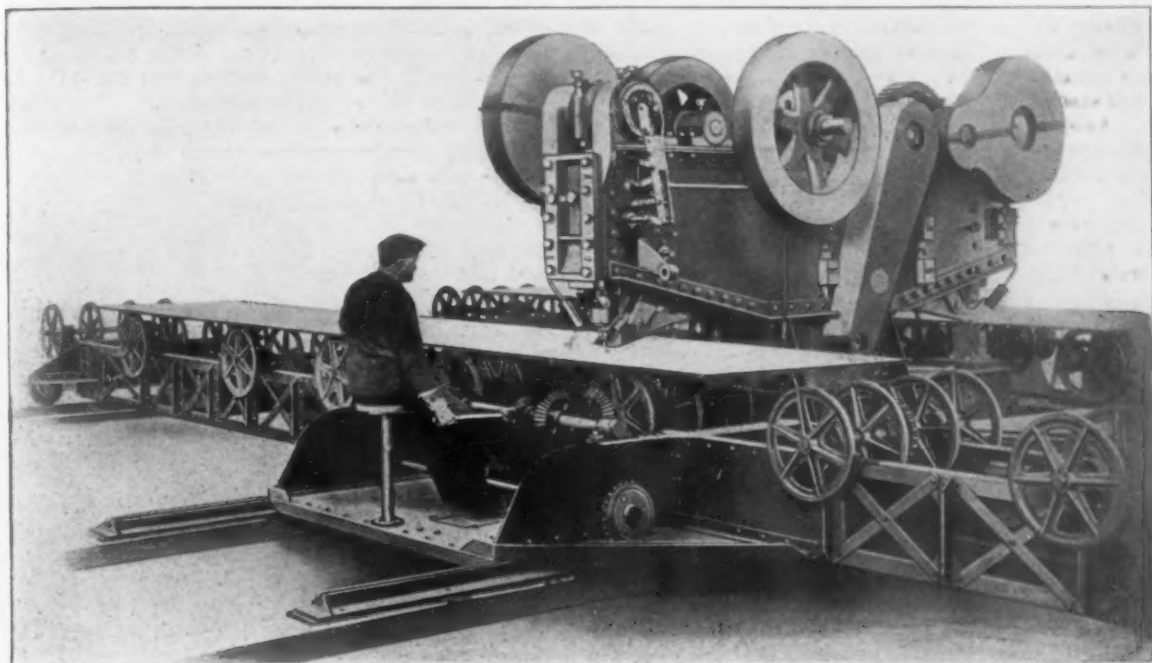
and Roumania all have good reason to realize the forceful might which industrial management gains when it calls into its councils the schoolmaster and technical expert, for we are fighting the wonderful results of German industrial system in this regard. With the passage of the national laws this year the industrial manager is enabled effectively to co-operate with the schools in the vocational training of workers.

Finally we come to the most important aspect of the alien in his home life—namely, that of housing, for this most intimately affects the alien woman, and a man's working power depends, more than on anything

everywhere, to take immediate steps by pooling their knowledge to provide the largest opportunities for individual growth as well as the greatest measure of hopefulness and happiness to these strong and adventurous spirits who have come to seek their fortunes in a new world—our alien friends, brothers and co-workers.

#### Norbom Plate Punch Table

The great expansion in steel shipbuilding industries has made the rapid handling of plates at the punching machines a real necessity, and this need has been filled



Considerable Time and Labor Are Saved in the Punching of Plates by the Use of the Lysholm Plate Punching Roller Tables, the Product of the Norbom Engineering Co., Philadelphia. By means of this machine from 420 to 670 holes per hour can be punched

else, upon whether his wife is content in her home. But no alien woman either could or would be content or happy in the crowded tenement quarters, the squalid and vile neighborhoods, the stupid household arrangements with which she is forced to battle from morning till night, due to unintelligent planning of houses.

#### Conclusion.

In this brief series of articles concerning the alien worker we have considered of first importance for Americanization and through Americanization for efficient production the fact that in these days when information is made common property through the printed page, literacy should be made universal.

That the use of the English language should be required.

That works conditions and methods should be modernized and efficient and

That community living should be rendered safe, wholesome and happy.

In these four essentials it is difficult to see how the industrial manager can disclaim responsibility. It is clear that no single employer can battle successfully with these industrial community problems, nor can the community apart from the employing concerns hope for much relief until industrial managers agree to co-operate on constructive civic programs. When we realize that the alien in general is without a vote, or even when registered as a citizen is exploited politically for private profit, it becomes our unavoidable conclusion that industrial management can no longer keep aloof, but must perform its share in removing civic management from party politics.

America at war means not merely America on the firing line, but America active in the factory, the mine, or on the farm, and as the aliens to the number of 13,000,000 are bearing the brunt industrially of providing means for defense and offense, it becomes the economic, as well as the patriotic duty of managers

in many of the new plate shops by the use of the Lysholm plate punch roller tables, manufactured by the Norbom Engineering Co., Denckla Building, Philadelphia.

In using this plate punch roller table the plate is laid on the table and the operator, from his seat, moves the table backward and forward with the aid of an operating lever at his right hand. At his left hand is another lever, which can be operated to move the plate sideways, thereby placing it in the desired position for punching. Operation of the punch can be effected by the use of a foot lever.

By this method plates from  $\frac{1}{4}$  in. to  $1\frac{1}{2}$  in. thick and up to 30 x 8 ft. may be handled. The tables are built with roller bearings to make operation easy. It is claimed that plates can be handled in one-half the time required by the old method, and the services of only one man at a machine are required.

The Norbom Engineering Co. has records which were kept at various shipyards, showing that the number of holes punched per hour by this method has averaged from 420 to 670 on material varying in thickness from  $\frac{9}{16}$  in. to  $1\frac{1}{2}$  in., and from 5 to 8 ft. wide by 24 to 30 ft. long, the holes punched being  $\frac{13}{16}$  in. diameter up to  $1\frac{1}{16}$  in. diameter. A good average in a number of shipbuilding plants was 4000 holes in a 9-hr. working day.

Practically all of Venezuela's imports of construction materials and supplies are now coming from this country, but we are in danger of losing much of the trade as soon as the war is over. Just where the danger lies and what the trouble is is carefully explained by Special Agent W. W. Ewing in a publication, "Markets for Construction Materials and Machinery in Venezuela," Special Agents Series No. 144. Copies may be obtained at the nominal price of 10 cents each at the Bureau of Foreign and Domestic Commerce, Washington.

### Lathe for Turning Torpedo Heads

A special machine for turning the air flask heads on torpedoes has been built by the Luster-Jordan Co., Norristown, Pa., for the Spanish Government. While the machine is a standard lathe, a number of modifications have been made in it and the method for producing the work differs, it is stated, from that employed heretofore. While a standard lathe was formerly employed for turning these heads, the different radii on the various surfaces were obtained by the use of several radius attachments. This necessitated the employment of 10 different adjustments on the radius attachments to complete both sides of one head, since there were from two to five distinct curves on the inside of the head alone. The new method dispenses with the radius attachment, but uses a forming attachment on the tail-stock and in some cases one on the carriage as well. Another change in the construction of the lathe are increases in the width and weight of the tool post on the carriage.

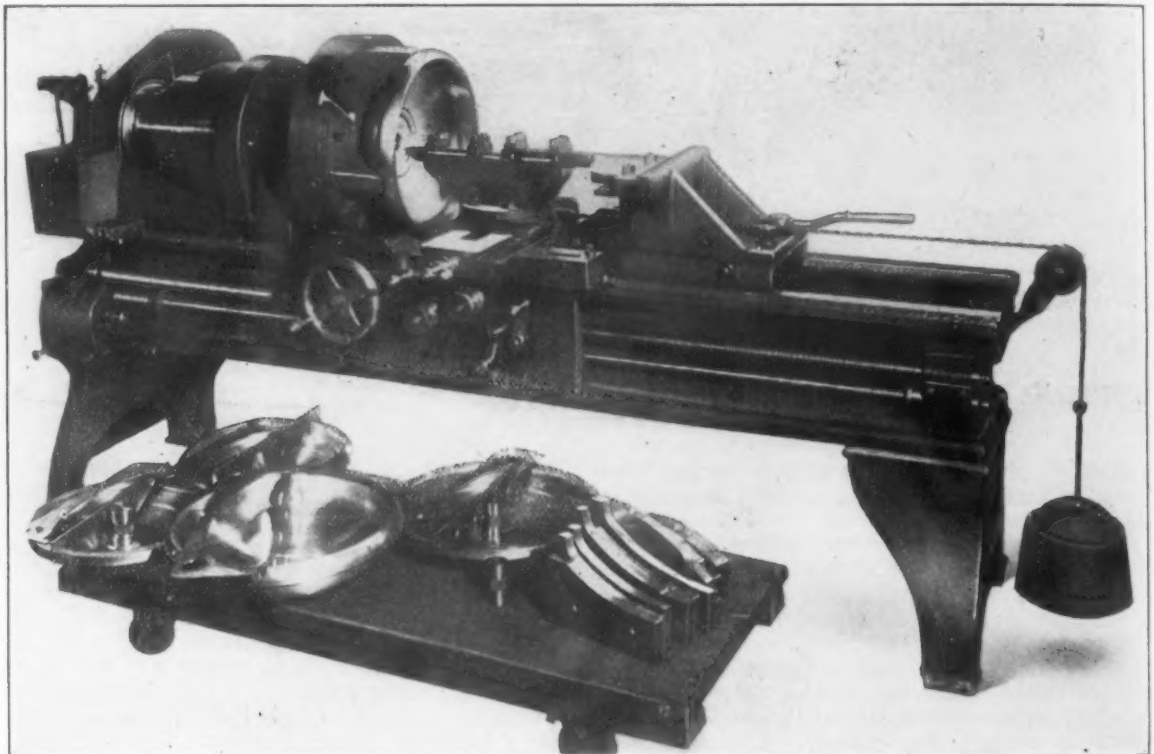
The upper part of the tailstock has been removed and replaced with a special attachment made to conform to the outline of the head that is to be machined. A straight slot, which is parallel with the center line of

other is engaged without interruption. This has been secured by splitting the screw operating the tool post and connecting this attachment with the clutch on the carriage that operates the carriage feed. In this way the machine has been made practically automatic. The tool post carriage has a counterweight to pull the tool away from the work when the guiding tool strikes a spot in the forming plate that is concave with relation to the front of the tailstock. A progressive boring tool, which is registered by the guide in the center of the form, is provided for boring the center of the head.

For gaging the heads a plug gage is inserted in the center and the inside form of the head is measured from the plug gage by a flat gage. The outside contour of the head is measured by a second flat gage that rests upon the upper surface of the inner flat gage. In this way not only the inside and outside contours but the thickness of the head are measured.

The equipment of the machine includes an oil pump to supply cutting compound at the tool point and progressive feeds on the cross slide to compensate for the different peripheral speeds.

The time required for finishing the heads with this machine is approximately 6 hr. for one having a diameter in the neighborhood of 12 in. and between 10 and



A Forming Attachment on the Tailstock of a Standard Lathe Is Employed in Place of a Radius Attachment to Turn the Curves on the Interior of an Air Flask Head for Torpedoes

the lathe, extends across the upper face of the tool post and the cutting tool is located at one end, while the forming guide is placed at the other. The adjacent ends of the tool and the forming guide are circular, the distance of the center of the circles between the cutting tool and the guiding tool being approximately  $\frac{3}{4}$  in. apart, which is the width of the slot.

The forming plate has two graduations marked "center of work" and "center of tool" respectively, the two being about  $\frac{3}{4}$  in. apart to register correctly. A circular cutting edge is employed to enable the tool to follow all around the form and go into the recesses. The forming plate is not of the same outline as the finished torpedo head. If, for example, the radius of a certain portion of the head is 16 in., the radius of the forming plate will not be the same since the cutting tool does not always cut on the same point, but changes around the circular form of the tool. Each forming plate has been developed according to the outline of the head with which it will be used.

To have the machine operate correctly, the tool post screw has been disconnected and reconnected with the feed of the carriage, so that as one is thrown out the

14 hr. for one having a diameter of 22 in. As this record was made with cast-iron pieces, it is believed that the time can be materially improved when the forgings from which these heads are regularly made are used.

### Iron Ore Production in Missouri

While not yet reflected in actual production, much more interest has been shown in the various deposits of iron ore in the state during the past two years, according to the biennial report of the State Geologist of Missouri. In part this has been due to putting in blast the old St. Louis Blast Furnace Co.'s stack at St. Louis by the Mississippi Valley Iron Co. The charcoal furnace of the Sligo Iron Works at Sligo, Mo., has been operated continuously at full capacity.

The production of iron ore for 1914 was 36,304 tons valued at \$75,696, while in 1915 there was an increase to 40,290 tons, valued at \$99,853. The producers for 1915 were the Sligo Furnace Co., Salem; L. C. McSpadden, Salem; Iron Mountain Mining Co., Iron Mountain; Julian Pickes, Morrellton; A. J. Sanders, Steelville, and Kingsbury Mining Co., West Plains.





### Employees' Restaurant at Whitaker-Glessner Works

A restaurant run on the co-operative plan entirely has been established by the Whitaker-Glessner Co. at its Portsmouth, Ohio, works. The scheme originated with one of the company's officials, who conceived the idea that the mill workmen would more liberally patronize the restaurant if they had a voice in its management, and he also thought that the co-operative plan would bring about a closer community of interests between employers and employees. After a year's trial the plan has proved to be very successful.

To carry out the idea the Whitaker-Glessner Co-operative Association was formed, made up from one man in each department of the plant. The men in each mill department choose their representatives, and these committeemen act as a board of directors for the association. A meeting is held of the committee or board of directors the second Saturday of every month, when recommendations are considered as to the operation of the restaurant, and such changes recommended as may seem desirable.

The most important question that has lately confronted the committee concerns the prices that should be charged. The restaurant is operated with the idea of having it pay its own expenses, charging the men only sufficient to cover the cost of the food and of preparing and serving it. With the late rapid changes in costs, this has proved to be somewhat difficult, and some prices were necessarily raised. The committee, having access to all records, explains this in detail to the men they are representing, and as a consequence there is no feeling that any unfair advantage is being taken. Each employee now seems to feel that he has a personal interest in the restaurant.

Even at present high costs, a substantial meal may be obtained around 23c. to 26c., as may be noted by the following prices on a few staple articles of food: Meat, 6 cents; vegetables, 5 cents; coffee and milk, 3 cents; pie, 4 cents, and ice cream, 4 cents.

The company operates its own bakery and the only prepared food bought on the outside is ice cream. The system of buying has been perfected to such a point that it is not necessary to serve any left-over food the following day. This fact is known to the men and is a matter of considerable favorable comment among them.

Another unusual feature is that the restaurant is open both night and day and at any time a workman can get something substantial to eat. The main meal is served between 11 a.m. and 2 p.m., and within that time approximately 1400 men are fed. The dining room will seat 450 at a time, and there is a smaller one in the basement, but large enough to take care of the colored workmen. The kitchen, which is located in the rear, is fitted with all modern conveniences, and an elevator is provided for conveying food to the colored men's dining room.

The men enter the building at the rear, passing a stand on which there are waiters, and they select their own food, passing out by a cash register. Each one is furnished with a check showing the amount due for the food selected. The workman leaves by the front door, passing another register, where he can either pay in cash or in coupons from a book that is provided

by the association. These books range in value from \$1 to \$5.

At the start the company provided china dishes for sending meals to the workmen in the mills who were unable to leave their tasks, but found that the expense of breakage and loss from other causes was too great, so that now wooden containers are provided. In addition Mason fruit jars are sold to the workmen at cost, so that coffee, milk or other liquids may be carried to different parts of the plant.

### An American Company for the Greaves-Etchells Electric Furnace

T. H. Watson & Co., Ltd., Sheffield, England, who control the patents of the Greaves-Etchells Electric Furnace, announce the formation of an American company to handle the furnace business in the United States and Canada. The new company will be known as the Electric Furnace Construction Co., with head offices in the Finance Building, Philadelphia.

The Greaves-Etchells furnace is well known in the Sheffield district and other parts of England, and over thirty furnaces ranging in size from  $\frac{1}{4}$  ton to  $12\frac{1}{2}$  tons capacity have been contracted for, including special government equipments. The American company has just received awards for 6-ton equipments to be installed in the United States Navy Yards at Puget Sound, Norfolk and Honolulu.

Frank Hodson, a partner of the T. H. Watson & Co., is now in this country to arrange the details of the new company, and will act as its president. He has been identified with the metallurgical field and general iron and steel trade for many years. F. J. Ryan, who resigned as eastern manager of the Snyder Electric Furnace Co. on June 1, will be general manager. He has been connected with the foundry and steel equipment business for a number of years, and is well known in the eastern districts. The two inventors, Mr. Greaves and Mr. Etchells, will act in associate capacity to the company's technical staff and when necessary will take charge of actual installation.

### Efficiency and Fatigue in British Munitions Factories

An interim report on "Industrial Efficiency and Fatigue," recently issued by the Health of Munition Workers Committee of the British Ministry of Munitions, has been reproduced in bulletin 230 of the Bureau of Labor Statistics of the U. S. Department of Labor.

On the whole, night-work is regarded as undesirable, although there is no significant difference between the rate of output in night and day shifts managed on the discontinuous system which is preferred to continuous night-work, the latter being productive of definitely less output. The report shows that health and efficiency of workers are influenced by the earnings. In one factory 17 girls drilling fuses and working on the piece-rate basis, in one week increased their output by 24 per cent on the day-shift and by 40 per cent on the night-shift over their output when working on a time-wage basis. Among the men sleepiness on the night-shift, headache, footache, and muscular pains, together with nervous symptoms, are probably the most common signs of overwork. Eighty per cent of the lost time among the 1543 men was due to sickness and 20 per cent to accident.

State-subsidized steel making is under discussion in Norway. It appears that the Strømmen Works is to receive a subsidy, allowing an increase of steel production from 5000 to 10,000 tons per annum, and the Christiania Spikerverk is to receive for a period of five years a premium of 8 kroner per ton of rolled steel and is to install a rolling mill of 10,000 tons annual capacity. The Strømmen Works is not supposed to commence operations until war mobilization takes place and the steel is for projectiles; while the Christiania Spikerverk is to start in peace time only and its products are mainly for reinforced concrete work.



# Manufacturers and Section 3 of Lever Act

## Government Contracts by Companies to Which Committee Members Belong Need Not Be in Violation of Law

WASHINGTON, Aug. 21.—Upon the authority of the Director of the Council of National Defense, the correspondent of THE IRON AGE is able to state that there is no substantial basis for the apprehension recently reported as being entertained by the officers of certain large corporations, who are members of the subordinate committees of the council, that the exercise of their functions may be in violation of the terms of section 3 of the Lever food control law which received the President's signature a few days ago. The matter is one of very general importance to the business community as the subcommittees of the council include several hundred prominent officials of the most important manufacturing corporations of the country.

### Original Prohibition Drastic

According to widely published reports, many of the members of the council's subcommittees have been advised by their attorneys that Section 3 of the Lever act, taken in conjunction with Section 41, Chapter 321, 35th Statutes at Large, makes it unlawful for them to take any part in negotiating with the Government contracts with corporations with which they are connected or in which they have any pecuniary interest. It is obvious that if this contention were sound, the Lever act would operate to legislate the entire membership of the council's subcommittees out of office. According to Director Gifford, however, the provision of the Lever act referred to was carefully drawn to avoid the exact situation now said to have developed. The section as finally written into the bill was offered by Senator Pomerene with the knowledge of the Council of National Defense as a substitute for a very drastic provision incorporated in the measure by the Senate Committee on Agriculture which read as follows:

That it is hereby declared unlawful for any person acting either as a voluntary or paid agent or employee of the Government in any capacity, including an advisory capacity to any commission, board, or council of the Government, to procure, attempt to procure, or make any contract for the purchase of any supplies for the use of the Government either from himself, from any firm of which he is a member, or corporation of which he is an officer or stockholder, or in which he has any financial interest. Any person violating this section shall, upon conviction thereof, be punished by a fine not exceeding \$10,000, or by imprisonment for not more than five years, or both, in the discretion of the court.

### The Amended Section 3

This provision was frankly intended to prevent the officers or agents of corporations or persons financially interested therein from having anything whatever to do with the placing of Government business with their respective corporations. If this section had been retained in the bill, there is no question that practically all the subcommittees of the council would have been forced to resign, as their usefulness would have been at an end. Realizing, however, the logical effect of such an enactment, several Senators holding more conservative views than Chairman Gore and his colleagues on the Committee of Agriculture, after conferring with members of the council, decided to oppose the committee amendment, and Senator Pomerene subsequently offered a substitute for Section 3 which was adopted in the following language:

Sec. 3. That no person acting either as a voluntary or paid agent or employee of the United States in any capacity, including an advisory capacity, shall solicit, induce, or attempt to induce any person or officer authorized to execute or to direct the execution of contracts on behalf of the United States to make any contract or give any order for the furnishing to the United States of work, labor, or services, or of materials, supplies, or other property of any kind or

character, if such agent or employee has any pecuniary interest in such contract or order, or if he or any firm of which he is a member, or corporation, joint-stock company, or association of which he is an officer or stockholder, or in the pecuniary profits of which he is directly or indirectly interested, shall be a party thereto. Nor shall any agent or employee make, or permit any committee or other body of which he is a member to make, or participate in making, any recommendation concerning such contract or order to any council, board, or commission of the United States, or any member or subordinate thereof, without making to the best of his knowledge and belief a full and complete disclosure in writing to such council, board, commission, or subordinate of any and every pecuniary interest which he may have in such contract or order and of his interest in any firm, corporation, company, or association being a party thereto. Nor shall he participate in the awarding of such contract or giving such order. Any willful violation of any of the provisions of this section shall be punishable by a fine of not more than \$10,000, or by imprisonment of not more than five years, or both: Provided, That the provisions of this section shall not change, alter or repeal section 41 of 35th Statutes at Large.

### What Existing Statute Prohibits

That the full purpose of this section may be understood the text of Section 41, Chapter 321, 35th Statutes at Large, is here reproduced, as follows:

Sec. 41. No officer or agent of any corporation, joint stock company, or association, and no member or agent of any firm or person directly or indirectly interested in the pecuniary profits or contracts of such corporation, joint-stock company, association, or firm shall be employed or shall act as an officer or agent of the United States for the transaction of business with such corporation, joint-stock company, association, or firm. Whoever shall violate the provision of this section shall be fined not more than \$2,000 and imprisoned not more than two years.

In the opinion of the Council of National Defense, the two provisions above quoted contain four specific prohibitions: First, that no person who happens to be a member of a subcommittee of the council "shall solicit, induce or attempt to induce any person or officer authorized to execute or to direct the execution of contracts on behalf of the United States to make any contract or give any order, etc.;" second, that no member of such subcommittee shall "make or participate in making any recommendation concerning such contract or order" to the council without making "a full and complete disclosure in writing" to the council "of any and every pecuniary interest which he may have in such contract or order, etc.;" third, that no such person shall "participate in the awarding of such contract or giving such order," and fourth, that no officer or agent of any corporation "shall act as an officer or agent of the United States for the transaction of business with such corporation."

### New Method of Awarding Contracts

As to the first prohibition, it is frankly conceded by members of the council that, prior to the enactment of the Lever law, members of the subcommittees, as the result of direct representations made by them to purchasing officers of the Government, may have "solicited, induced or attempted to induce" such officers "to execute or to direct the execution of contracts." Since the organization of the War Industries Board and since the Lever act became a law, nothing of this kind has taken place. Under the present system, Government officials desiring material bring their needs to the attention of the War Industries Board, whose members are constantly in attendance in Washington. The board then calls upon the appropriate subcommittee to ascertain where the material can be obtained and all pertinent facts in reference thereto. With these facts before it,

the board decides upon the recommendation it shall make to the purchasing officer. In this way the members of the subcommittees are not brought into touch with the executive departments at all and in their dealings with the War Industries Board they represent, not the Government, but the industry which is to supply the material. Had there been time to carry out so comprehensive a project, the Council of National Defense would have arranged for the appointment of all the industrial subcommittees at conventions called for the purpose and attended by representatives of every producer in the country who cared to be present. This being impracticable under the circumstances, the committees were chosen from among representative men and it was intended that they should act for the sellers rather than for the Government, while at the same time placing at the disposal of the Government their comprehensive technical knowledge of the various industries.

In accordance with the second prohibition above enumerated, no recommendation is now made by any subcommittee or member thereof without filing with the recommendation "a full and complete disclosure in writing" of such member's interest in the contract in question. This provision of the law is being rigidly executed because it is the law; obviously, however, the War Industries Board and the purchasing agents of the departments are already fully informed as to the interest of all the various subcommittees in contracts for material produced in their respective industries.

As to the third provision, it is claimed that under the present system no member of any subcommittee of the council "participates in the awarding of such contract or giving such order." Even the War Industries Board makes no awards and lets no contracts, its work, like that of its subcommittees, being advisory only.

#### Committees Not Government Agents

The fourth prohibition quoted is found in Section 41, Chapter 321, 35th Statutes at Large, and prohibits an officer or agent of a corporation, etc., from acting as "an officer or agent of the United States for the transaction of business with such corporation, etc." This statute was passed long before the Council of National Defense was created and when the council's various advisory subcommittees were appointed, it was the unanimous opinion of the members of the council, at least two of whom are lawyers of high attainments, that the members of such subcommittees were in no sense "officers or agents of the United States" within the meaning of the law. The courts have rendered numerous decisions which furnish a sound basis for this contention.

Up to the present time, no official cognizance has been taken of this controversy and no resignations based upon the contentions involved have been received from members of the council's subcommittees. Should the matter assume more serious proportions, however, the issue will be definitely formulated by the council and probably referred to the Attorney-General for a formal opinion.

#### Electric Steel Co. Buys Property

The Electric Steel Co., Chicago, has purchased the property it occupies at the Southwest corner of Thirty-first and Wood Streets, Chicago. The land comprises about 175,000 sq. ft., and is improved by a two-story foundry building. The company was organized two years ago by officials of the Link-Belt Co.

There is an urgent demand throughout Italy for pipe fittings, according to a report to the Department of Commerce from Consul F. T. F. Dumont of Florence. He says that stocks of German and Swiss goods have been sold out, Great Britain requires its goods for its own use, and France seems to be unable to pick up the Italian trade. A good market is open to American manufacturers, he reports, if they will conform to the Italian requirements. The principal requirement is that fittings must have right-hand threading of English standard. Even left-hand thread might be used if of English standard.

## NATIONAL SAFETY CONGRESS

### Meeting Will Include Reading of Papers and an Exhibit

The sixth annual meeting of the National Safety Congress will be held at the Hotel Astor, New York, Sept. 10 to 14. A feature will be a national exposition of safety and sanitation at the Grand Central Palace in which the American Museum of Safety will co-operate. Monday, Sept. 10 will be devoted to special committee meetings. Tuesday morning will be given up to registration and the annual meeting, including reports and election of officers. There will be a general round table discussion Tuesday afternoon and a general session Wednesday with addresses. The remaining days will be devoted to sectional meetings. The iron and steel section will meet Wednesday, Thursday and Friday afternoons and the foundry section will have its meeting Thursday morning. The program for these sessions is as follows:

#### IRON AND STEEL SECTION

Wednesday, Sept. 12

Chairman, George T. Fonda, safety engineer, Bethlehem Steel Co., South Bethlehem, Pa.; vice-chairman, Earl B. Morgan, safety engineer, the Norton Co., Worcester, Mass.; secretary, J. C. Smith, safety director, Inland Steel Co., Indiana Harbor, Ind.

Unsettled Accident Prevention Problems in Iron and Steel Industries, L. H. Burnett, assistant to president, Carnegie Steel Co., Pittsburgh.

Analyses of Accidents, Dr. Lucian W. Chaney, U. S. Department of Labor, Washington. Discussion: D. R. Kennedy, assistant to president, Youngstown Sheet & Tube Co., Youngstown, Ohio; L. W. Hatch, chief statistician, Department of Labor, State of New York, Albany, N. Y.

Thursday, Sept. 13

Safety in Yard Practice, F. G. Bennett, safety director, Buckeye Steel Castings Co., Columbus, Ohio. Discussion: J. Stanford Brown, supervisor, department of labor, safety and welfare, the Carpenter Steel Co., Reading, Pa.

Safe Practices in Sheet Mills, Frank E. Morris, safety engineer, American Rolling Mill Co., Middletown, Ohio. Discussion: J. M. Wolts, safety director, Youngstown Sheet & Tube Co., Youngstown, Ohio.

Open Hearth Hazards, Leslie M. Rice, district safety inspector, American Steel & Wire Co., Worcester, Mass.

Safety and the Foreman, J. S. Herbert, superintendent, safety department, Cambria Steel Co., Johnstown, Pa. Discussion: J. M. Larkin, service department, Fore River Shipbuilding Co., Quincy, Mass.

Friday, Sept. 14

Low Voltage Hazards, Dr. C. A. Lauffer, medical department, Westinghouse Electric & Mfg. Co., East Pittsburgh. Discussion: Harold Kirshberg, consulting illuminating engineer, Pittsburgh.

Round Table Conference—New Kinks in Eye Protection, L. L. Parks, safety and apprentice supervisor, American Locomotive Co., Schenectady, N. Y.; Drinking Water, J. H. Ayres, superintendent of safety, sanitation and welfare, National Tube Co., McKeesport, Pa.; First Aid, J. R. Mulligan, assistant safety engineer, Bethlehem Steel Co., South Bethlehem, Pa.; Lunch Rooms and Change Houses, John P. Eib, supervisor of safety and labor, Illinois Steel Co., Joliet, Ill.; Problems of Returning Injured Men, Earl B. Morgan, safety engineer, the Norton Co., Worcester, Mass.

#### FOUNDRY SECTION

Thursday, Sept. 13

Chairman, F. G. Bennett, Buckeye Steel Castings Co., Columbus, Ohio; vice-chairman, F. W. Shepard, safety inspector, American Cast Iron Pipe Co., Birmingham, Ala.; secretary, S. W. Ashe, educational and welfare department, General Electric Co., Pittsfield, Mass.

Method of Training and Obtaining the Co-operation of Foundry Foremen in Safety Work, W. E. Watters, National Malleable Castings Co., Melrose Park, Ill.

Treatment of Foundry Burns by Paraffine Substances, Dr. L. F. Mutschman, chief surgeon, American Steel Foundries, Alliance, Ohio.

How Improvement in Safety Conditions Reduces Labor Turnover and Accidents.

Practical Welfare Work in Foundries, S. W. Ashe, educational and welfare department, General Electric Co., Pittsfield, Mass.

Mechanical Safeguarding of Electric Traveling Cranes, J. Claude Smith, safety director, Inland Steel Co., Indiana Harbor, Ind.



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# THE IRON AGE

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## Steel Exports to Allies

It is known that shipments on a large tonnage of ship plates bought for Japan have been cut off by the Government's embargo which went into effect Aug. 15. A cablegram of Aug. 20 from Tokio says that urgent representations have been cabled the Ishii commission, now in the United States, to secure the lifting of the ban on these exports. The continuance of the embargo, the cablegram said, would mean "a death blow to shipbuilding and other industries in Japan."

The amount of ship steel for Japan on the books of American manufacturers has been put as high as 300,000 tons. It is understood that Japan now seeks to contract for several hundred thousand tons more. The steel is desired for purely commercial reasons and its delivery cannot be urged on the ground that its shipment to Japan would help to win the war. The plate requirements of the shipyards of the United States and of Italy and France are bound to have precedence. In all friendliness, how can our Government say anything to Japan than that her purchases of plates in this market must stand aside while the plate mills of the country are speeded to the fullest extent to meet imperative war needs?

The embargo on exports of certain forms of finished steel involves a number of questions affecting this country's relations with its Allies, and the decision respecting plates for Japan does not stand by itself. The embargo certainly was not undertaken with any intention of reducing steel exports from the United States or of interfering with this country's commercial relations with any other country. It is naturally the desire of the authorities at Washington to keep the country's export trade at the highest point consistent with the forwarding of the war plans of the United States and its Allies. It is no part of this country's duty to restrict its exports in certain kinds of steel to the war needs of its Allies, while at the same time an allied country is exporting for commercial purposes steel which it might turn to its own war uses. Recently a Canadian exporter wired to Washington for per-

mission to ship steel to Japan by way of Seattle. It was found on investigation that steel of the same character was going from the United States into Canada for war uses. Other questions of this sort are now before the War Industries Board at Washington and their right solution calls for the fullest and frankest co-operation by this country's Allies. England is exporting a very considerable amount of steel. The United States is not called on to give up any part of the export steel trade built up in the past few years in order that Great Britain may increase her commercial exports of steel. We have no doubt this point will be freely made by the representatives of the United States and as freely conceded by the British commissioners in the conferences now being held at Washington.

## Larger Steel Output

We have already called attention to the increased production of steel in the United States in the first half of 1917 as a partial explanation of the freer offering in the past month of semi-finished steel in the market. Returns from a large part of the steel producing capacity of the country indicate that the output of steel ingots in the first half of this year was close to 21,475,000 gross tons, or at the rate of 42,950,000 tons a year. In 1916, according to the official statistics, our production of ingots was 41,401,000 tons. It thus appears that production in the first half of this year was at an annual rate greater by 1,550,000 tons than that of 1916.

As pig-iron production in the first half of this year was 350,000 tons less than in the first half of 1916 and 550,000 tons less than in the second half of last year, the increased production of steel must have been due to one of two things or to both; namely, a much larger use of scrap in the making of open-hearth steel and the use of a considerable tonnage of cold pig iron drawn from stocks. It is probable that both of these things happened. The larger buying of scrap by steel works is quite well established; it is known also that stocks of pig iron were roundly a half million tons less on July 1, 1917, than one year previous. At all events, the larger output of steel in the first half of this year



and the continuance of this higher rate through July with some further increase are of interest as bearing on the immediate future of steel values.

### Iron Trade Organization for War

The value of the various organizations built up in the iron trade in recent years has had fresh demonstration in the effective work they have done on various situations created by the war. The American Iron and Steel Institute, the American Pig Iron Association, the Lake Superior Iron Ore Association and the ore and vessel interests represented in the Lake Carriers' Association have all co-operated to put the iron and steel industries at the disposal of the Government.

With little publicity, the Lake Superior Iron Ore Association has done an important work in determining within close limits the amount of Lake ore which must be delivered by the railroads from lower Lake docks to the blast furnace yards within the season of navigation. The Council of National Defense has viewed with much concern the apparent inability of the railroads to carry to the furnaces as much ore as they delivered last year, that quantity seeming fairly to measure the furnace requirements as indicated by the requisitions furnished the association in the early canvass of the blast furnace situation. The council through its sub-committees has brought this question home to the individual blast furnace companies and the ore association. In consultations between the president of the Lake Superior Iron Ore Association and the blast furnace managers the actual requirements of ore in each case have been analyzed so as to determine the amount of the various grades required up to June 1, 1918. This method promises to bring about exact results, avoiding any unnecessary ore movement and at the same time meeting the important requirement of providing each plant with enough ore of the proper grades to enable it to run to full capacity, so that the Government, its Allies and the public may be supplied with the greatest of war essentials, the products of iron.

The blast furnace interests are making a gratifying response to the efforts made to have this matter worked out on the right basis and the Railroads' War Board is alive to the necessity of furnishing equipment—even to the subordination of other interests not so essential—after the ore requirement has been definitely fixed.

It is not amiss to point out that the machinery for marshaling and acting upon the facts relative to the industry on which the country must chiefly depend in this time was ready to hand. The quick mobilization of that industry has been in contrast with much that has been done through strictly Government agencies. It may also be said without elaborating the point that there is much to gain from a closer co-operation between the Government and iron and steel manufacturers than Government representatives have invited thus far.

Reports from practically all industrial centers of England show much unrest and a unanimity in charging it to the high cost of living. There is a widespread belief that considerable profiteering is going on, and, as the special war taxes are taken

from corporations and not from individuals, it is believed that the individuals in ownership of corporations are not carrying the load that the wage earner is, and thus there is a feeling of a lack of equality of sacrifice.

### Prospects of Freight Congestion

Some railroad officials have assured shippers that a serious freight congestion is in prospect. This is rather disturbing, when the news lately has been of better results in transportation, for the monthly reports of car supplies have been showing decreasing shortages, and shippers generally have had less cause for complaint than during the winter and early spring. The Lake coal and ore movement has been smoother than expected.

The railroads have been hauling the record freight tonnage in their history. Their carrying capacity has been increased by resort to certain expedients adopted on account of the war. The railroads of the country are being operated, in theory, at least, as one system. By a vigorous propaganda car loadings have been increased. Many passenger trains have been annulled while others have had their time reduced so that their movement is less of a misfit with the more slowly moving freight trains.

The danger ahead, according to the predictions, is on account of the heavy movement of building material to the 16 army cantonments, and later the movement of men and food to them. It is to be noted, however, that already a great deal of material has been moved to the cantonments and general conditions have not suffered.

The question whether there will be a greater strain upon the railroads one month or three months hence hinges largely upon whether the progress toward greater efficiency can continue. If all that can be done has already been done it will be impossible to stand a farther straining of the physical equipment.

The building of the cantonments is new work, necessitating freight movement that would not occur if we were not at war. The feeding of the men in the cantonments is nothing new; they would have to be fed in any event. It is a question whether in rushing construction material to the cantonments the dislocation to other traffic has not resulted in some decrease in the total of railroad efficiency, for speed has been the sole desideratum. In the case of furnishing regular supplies to the cantonments, once they are in operation, system can be employed, and perhaps the movement of food will involve less work for the railroads than the movement of the food that has been going to the men at their homes, for the movement certainly can be systematized.

A very large proportion of the men assembled at the cantonments will be taken from the ranks of productive industry. Necessarily certain industrial operations will be slowed down, requiring less raw materials and producing less freight. The conclusion is unavoidable, and the change may amount to a material reduction in freight traffic.

Thus there seems to be a possibility that an increase in the freight congestion may be avoided, but the situation is full of dangers. It is unfortunate that the plan for the Government to purchase

freight cars to help out the railroads was abandoned. Nothing has been heard of it for weeks and the explanation offered is that just after it was proposed the railroad situation improved. That was hardly a sufficient cause, for there was no proof that the improvement was to be permanent. There is reason to doubt that it would have been extremely difficult to secure the plates for the cars. There are reports of plates accumulating at shipyards and there is certainly a great deal of new plate rolling capacity being built. At any rate it would have been enterprising to speed up work on the orders now on the books of the car shops so as to clear the way for additional orders should it be found desirable to place them.

### Scrap Dealers and the Fall in Prices

Dealers and brokers in old material had a distressing experience in the recent period when prices of scrap advanced by leaps and bounds to record-breaking levels. They found it impossible in many instances to obtain delivery of material for which they had contracted and which they urgently needed to meet their commitments. They were unable to get what they had purchased, for the reason that the sellers with whom they dealt had deliberately resold the material to buyers who were willing to pay a higher price, or were shipping it against more profitable orders. With the market rapidly advancing, prices of the afternoon being higher than those of the morning, there was frequent opportunity for this procedure.

For the most part the offenders were the smaller collectors of scrap—junkmen, really, although some of these do business on an extensive scale. A result of their tactics was that reputable dealers who adhere to their contracts were compelled to deliver material for which they paid far more than they received. They had bought at low prices, and, as the market went up, at higher prices. The low-priced material lagged in delivery or did not arrive at all, while that purchased at high prices came along in a satisfactory manner and constituted the entire stock available for the dealer to fill his contracts.

Taking losses is by no means unknown in the scrap trade, but a loss due to a misjudgment of the market is borne with a very different feeling from one due to double dealing. The decline which followed the excited ascent of prices was welcome relief to the dealers when the situation was so serious that some of them withdrew from active operations. There is a means of redress for losses due to the methods complained of, but for various reasons there has been a reluctance heretofore to appeal to the law in some cases, while in others the value of such an appeal has been only rated in proportion to the financial responsibility of the offenders.

Any easing of the plate market, now considered likely in respect to delivery dates, is predicated on the results of an indefinite export embargo on shipbuilding material not needed for war purposes. Certain it is that some mills producing the forms of steel going into cars and ships have rarely en-

joyed large business relations with car and locomotive builders. They had not been called on, as industry was rapidly expanding, and their order books were not early crowded, so that for months latterly they have been able to pick and choose. The result has been the booking of a good-sized business, averaging high in unit prices. Much of this being for export, and the exporting of ship material now being under the ban, domestic orders seem sure to reach the rolling departments earlier than would have been the case. Admitting that orders from foreign sources remain good, the result is merely a rearrangement of scheduling.

## CORRESPONDENCE

### Manganese in Ordnance Steel

*To the Editor:* Your issue of Aug. 2 contains an article by Dr. Henry Howe on the use of manganese in steel. Dr. Howe is an eminent authority on steel structure and no doubt his advice will be followed by some steel manufacturers.

As our people in the States will, no doubt, be occupied for some time in the manufacture of ordnance, I would caution them to make haste slowly in running their manganese above 0.90 per cent. My experience would lead me to believe that 0.90 is about the saturation point of that element and up to that point, if equally distributed, is a benefit to the steel.

The German shell steel occasionally runs up to 1.25 per cent in manganese but it is possible that scrap conditions in that country are such that they have no choice in the matter.

These remarks refer particularly to steel for ordnance.

JAMES J. MAHON,  
Steel Expert, Imperial Munitions Board.  
Ottawa, Ont., Aug. 18.

### Continuous Record of Plant Equipment

*To the Editor:* It has happened to many of us, and continues to be a source of more or less mystery, how some plant managers can tell you in a few minutes anything you want to know, not from memory, but from practical records. When at a meeting not long ago the very pointed question was asked, "How many feet of 3-in. double-ply leather belting is in service in your plant?" the answer was correctly given in 2½ minutes.

In some plants the individual machine is buried almost as much as the underground piping, and when repairs are necessary, as for instance, to a drill press, it may not be in the drilling department, but may be found in the smith shop or some other place, but usually it has to be looked for by the repair mechanics.

Also, when the time comes for inventory, the shut-down for measurement of belts and tagging fixtures, etc., has always seemed necessary. To eliminate all this lost time and to know at all times exactly where everything is, its value, etc., a simple record in the form of a plant chart is essential with your departments segregated into divisions and a keyed card index to take care of the continuous changes. Then the chart shows location of machinery, electric motors, shafting, belting, pulleys, fire equipment, telephone system, watchman's stations, electric time clocks, wiring and piping. The cards show machine or fixture number, quantity, cost, depreciation, etc. Each department head is furnished with a chart and when repairs are necessary, the request is made according to chart. If new equipment is installed or changed from one department to another, a record is kept on the cards.

After you have your department layout lined up the way you want it, with the location of machines and fixtures, etc., the cost for perpetual upkeep is practi-



cally nothing, as the few minutes to record the changes each day make it a routine matter, automatically taken care of like production entries. When you want to know quantity, original cost for repairs, etc., it is necessary that you have this information when wanted, not a day or so later.

The question reminds me of a story a master mechanic on the Santa Fé told me some years ago. His chief clerk, Charlie, had a very elaborate letter filing system, but could never find anything within a reasonable length of time. One day, after the whole office force had looked for a certain letter for about an hour, he called Charlie in and asked him if he had found that letter. "No," said Charlie. "All right," said the master mechanic; "now I want you to go out and get a big barrel and put all the letters we receive in that barrel, so we will know where they are."

We all know that the machines are in the plant some place, but not where motor number so and so is, nor how much of a load it is pulling. To know your plant like your letter file is the idea.

H. M. FITZ.

Sheboygan Falls, Wis.

### Bids on Projectiles

In asking for bids on common 1-lb. projectiles recently the Navy Department asked for alternate bids, in the one case the contractor to furnish steel and in the other case the Government to furnish the steel at 3.75c. The bids were as follows:

Driggs Ordnance Co. (Inc.), 120 Broadway, New York, bid A, 700,000 projectiles, not including lead plugs, contractor to furnish steel, 47c. each; begin delivery 60 days and will deliver 120,000 each month thereafter. Government to furnish steel at 3.75c., 45c. each; begin delivery 60 days and will deliver 120,000 each month thereafter. Bid B, 700,000 projectiles, own drawing, 46c. each; begin 60 days, will deliver 120,000 each month thereafter, contractor to furnish steel. Government to furnish steel, 44c. each; begin delivery 60 days, will deliver 120,000 each month thereafter.

Wagner Electric Co., 6400 Plymouth Avenue, St. Louis, 700,000 projectiles, 45c. each; begin delivery 60 days, will deliver 150,000 per month. Alternate bid, Government to furnish steel at 3.75c., 42c. each.

Poole Engineering & Machine Co., Woodbury, Baltimore, Md., for furnishing 2,000,000 or more projectiles, 40c. each; for further 700,000 projectiles, 41c. each; begin delivery Oct. 1, will deliver 400,000 in October, 300,000 November, and complete in November.

Bethlehem Steel Co., South Bethlehem, Pa., 700,000 projectiles, 95c. each; begin delivery 120 days, will deliver 75,000 each month thereafter.

Edwards Valve & Mfg. Co., 72 West Adams Street, Chicago, Ill., 700,000 projectiles, 57.5c. each; begin delivery 60 days, will deliver 75,000 each month thereafter.

Coit Machine & Engineering Co., Irvington, N. J., 700,000 projectiles, 45.5c. each, begin delivery 60 days; 700,000 projectiles, 36c. each, begin delivery 30 days; will deliver 50,000 first month, 75,000 second month, 100,000 third month, 100,000 fourth month, 100,000 fifth month, 100,000 sixth month, 100,000 seventh month, complete eighth month.

Tucker Supply Co., York, Pa., 700,000 projectiles, 39.25c. each; begin delivery 90 to 110 days, will deliver 100,000 each month thereafter.

Worcester Mfg. Co., Worcester, Mass., 700,000 projectiles, 45c. each; begin delivery 60 days, will deliver 25,000 first month, 50,000 each month for eight months, balance 3 months later. Alternate bid, steel at \$3.75 per 100 lb., 42½c.; delivery as above. This firm also submitted a bid on the cost-plus-percentage basis.

Fostoria Screw Co., Fostoria, Ohio, 700,000 projectiles, 53c. each; begin delivery 75 days, will deliver 100,000 first month, 150,000 second month, 175,000 third month, 200,000 fourth month, balance fifth month.

A successful test of a remodeled Colt machine gun, made by the Marlin Rockwell Corporation at its Marlin arms plant, New Haven, Conn., will be followed, it is reported, by large Government orders for the gun, which has been developed for aircraft service. The Marlin plant has made under license from the Colt Co. the regular Colt machine gun, which weighs 38 lb., and it is reported that in the new model the weight has been cut to 21 lb.

## CONTENTS

Expansion of the Gier Pressed Steel Co.	415
British Cognizance of American Shipbuilding	418
Organizing Many Fighting Industries	419
Abell-Howe Co. Organized	420
Mining Experiment Station	420
Record Production of Fluorspar in 1916	421
Agrees to Build Plant	421
A New Device for Marking Steel Tools	421
Gas Fired Welding Furnace	422
Coal Gas as a Motor Fuel	423
An Offset Drilling Attachment	423
Leaders of Congress Are Again Startled	424
Low Carbon Ferromanganese	425
Four Plants to Forge Guns	426
Shell Handling Equipment	426
A New Bearing Metal Alloy	427
A Case of Man Handling	428
German War Profits	428
Shipbuilding in Canada	428
Gisholt Machine Co. Will Do Full Share	428
A 25-In. Vertical Drilling Machine	429
Alterations in British Steel Sections	429
High Speed Steel Without Tungsten	429
The Alien and the Industrial Worker	430
Norbom Plate Punch Table	431
Lathe for Turning Torpedo Heads	432
Iron Ore Production in Missouri	432
Employees' Restaurant at Whitaker-Glessner Works	433
An American Company for the Greaves-Edchells Electric Furnace	433
Efficiency and Fatigue in British Munitions Factories	433
Manufacturers and Section 3 of Lever Act	434
Electric Steel Co. Buys Property	435
National Safety Congress	435
Editorials:	
Steel Exports to Allies	436
Larger Steel Output	436
Iron Trade Organization for War	437
Prospects of Freight Congestion	437
Scrap Dealers and the Fall in Prices	438
Correspondence	438
Bids on Projectiles	439
Forms for Export Licenses	440
Labor and the Draft	441
Federal Shipyard Begun	441
Iron and Steel Markets	442
Iron and Industrial Stocks	452
Metal Markets	453
Demand for Brazilian Zircon	453
Personal	454
Freight Service 26 Per Cent Greater	454
Prices Finished Iron and Steel, Pittsburgh	455
Book Reviews	456
Purchasing Agents Meet	457
Steel Supplies and the War	457
Copper and Steel Prices	457
New Steel Plant Starts	457
Norwegian Market for American Machinery	458
Takes Over Canton Company	458
Will Build Aircraft	458
New American Company Shipping Brazilian Manganese Ore	458
Coking Value of Illinois Coal	458
Great Ore Production	459
Will Blow in New Furnace	459
Obituary	459
\$750,000,000 More for Ships	460
Can Not Fix Prices for the Public	461
Eastern Freight Rates Increased 14 Per Cent	462
Government Needs More Metallurgists	462
McLain Furnace for Houston Foundry	462
Ship Contracts this Week	462
More Cars for Government Railroad in France	462
Machinery Markets and News of the Works	463
New Trade Publications	473



## FORMS FOR EXPORT LICENSES

### Detailed Data Required Where War Materials Are to Be Shipped

WASHINGTON, Aug. 21.—New rules governing the issuance of export licenses have been adopted by the Exports Council. Hereafter all applications for licenses must be made on one of the regular forms provided by the Division of Export Licenses or on identical forms provided by shippers. The practice of stamping the word "Licensed" on the back of the application itself has been discontinued and hereafter a regular form of license will be used which in certain cases may be issued by the district offices and which will bear the seal of the Department of Commerce. Collectors of customs, however, will honor any licenses already issued on application forms but upon the condition that they cover goods licensed on or before August 14.

Three application forms known as A-1, A-2 and A-3 have been adopted by the Division of Export Licenses and have been sent to all the district offices of the Bureau of Foreign and Domestic Commerce at Boston, New York, Chicago, San Francisco, Seattle, New Orleans and St. Louis, and to all the so-called co-operative offices working in conjunction with the Bureau. Shippers who care to do so may reprint these official forms with their names and addresses filled in for convenience, provided such reprints are identical with the official forms and are printed on paper of the same color.

#### For Shipments to Neutrals

Form A-1 is to be used for proposed shipments to countries not associated with the United States in the war or to their colonies, possessions and protectorates. On this form the applicant for license certifies that he has satisfied himself that the merchandise which it is proposed to export will not reach the enemy directly or indirectly and that neither the consignee nor purchaser is dealing with or is engaged in activities on behalf of the enemy. Each applicant must furnish the following information:

(1) Consignor; (2) consignee; (3) purchaser abroad; (4) name and address to which license should be sent; (5) name of line and (or) vessel by which shipment will go forward; (6) approximate date of intended ocean shipment; (7) port of intended shipment from this country; (8) prospective port of entry abroad; (9) if goods are to be re-exported, state to what country; (10) quantity in tons; (11) purpose for which goods are to be used; (12) name of manufacturers of the goods; point of origin; (13) if shipped, date of R. R. B/L; if arrived at seaboard, date of arrival; (14) if not shipped from factory, are goods ready for shipment; or when will goods be ready? (15) Have you a firm order for the goods; date of order? (16) Were you engaged in exporting goods of this kind to the proposed country of destination previous to August, 1914? (17) State the period during which you have maintained regular business relations with these purchasers; (18) Is the present order from them a normal one as compared with their orders previous to August, 1914? (19) If a guarantee has been issued in accordance with requirements as to shipments to certain countries give name, address and reference number of guarantor. (20) What proofs have you that the goods are for consumption by neutrals or by allies of the United States?

Form A-2 is to be used for shipments to countries associated with the United States in the war, their colonies, possessions and protectorates. The information required of the applicant for this form of license includes merely a statement of quantity and value of the goods, the name and address of the consignee, the date when the goods will be ready for shipment and the country, if any, to which the goods are to be re-exported by the consignee.

#### Form for War Material

Form A-3 is intended to be used for shipments of war material to countries associated with the United States in the war or to their colonies, possessions and protectorates and is of special interest to readers of THE IRON AGE as the articles which require the use of this form at present are pig iron, steel billets, iron and steel plates and iron and steel scrap. In addition to stating the quantity and value of the goods which it is

proposed to ship, the name and address of the consignee and the date when the goods will be ready for shipment, applicants are required to answer the following questions:

(1) State name and address of person or firm by whom the material or stores will be used, and whether engaged on Government work, and if so, of what kind and to what extent.

(2) Is the material indispensable for efficient maintenance or repair work?

(3) State the nature and extent of the plant to be maintained, repaired, or manufactured and the evidence of urgency.

(4) State the specific purpose for which the material, etc., is required.

(5) Why is it impossible to obtain the supply required, either in the country of destination or elsewhere than the United States, or to substitute some other material for that now asked for?

(6) How long will the supply now asked for last?

(7) What is your normal consumption for the period mentioned in your reply to No. 6?

(8) What stocks, if any, do you now hold of the goods asked for? In the case of machinery or plant what spares have you in hand at present? Name all firms in the United States or elsewhere from whom you have obtained the material, articles, or parts thereof in the past.

(9) Have you any stores or material of the description referred to in this application now under indent order or supply from the United States, or elsewhere; if so, what is the quantity? When and with what firm or firms was the order placed?

(10) Give the name and address of United States manufacturer of the goods referred to in this application.

Questions 1, 3, 7 and 9 need not be answered if the buyer is a foreign government.

In filling in applications shippers are required to observe the following rules:

(a) This form must be filled in in duplicate, and both copies signed by the foreign purchaser or by his duly authorized representative in the United States. Both copies must then be given to a representative of the Government of destination who has been authorized to indorse, on this fourth page, applications for goods destined for war purposes or directly contributing thereto. One copy bearing this indorsement will be returned to the applicant or such representative as he may designate, and this copy must be filed immediately at Division of Export Licenses, 1435 K Street, N. W., Washington, D. C.

(b) A separate application must be made for each country of destination.

(c) A separate application must be made for each class of goods and for each consignment. If only a portion of the goods covered by a specific license is exported, and the applicant desires to export the balance, another application should be made on application Form D entitled "Application for Supplementary Export License."

(d) The statement in regard to the quantity should be made in definite units of net weight or measure, such as tons (of 2240 lb. each), pounds, bushels, gallons, etc., and not in such terms as boxes, cases, sacks, etc.

(e) To avoid delays applicants are requested, in case of further communication, to refer to their own reference number and date, as well as to the reference number of the Division of Export Licenses if known, and to refer to each application in a separate letter.

(f) If the space allowed on page 1 is not sufficient adequately to describe the goods, a more complete description may be given in an accompanying letter. All documents which an applicant may wish to submit in connection with the application must accompany the application in the first instance.

Every applicant for a license under Form A-3 is required to make an affidavit declaring that he has been duly authorized to apply for an export license on behalf of the foreign purchaser, that he has full knowledge that the statements made in the application are true and that all the materials, articles or parts thereof mentioned in the application "are destined for actual war purposes or will directly contribute thereto."

The Exports Council announces that as rapidly as possible agents are being placed in all the neutral countries, especially Holland, Sweden, Norway and Denmark, to investigate the needs of importing firms in those countries. Delay of several weeks has been caused on the shipment of certain cargoes to these countries because the Exports Council was unable to make adequate investigation into the necessity for shipment. Applicants for licenses are now required to authorize the Council to use the cable in making any necessary investigations and agree to pay the expense thereof.

It is understood that a new list of commodities to be placed under the control of the Exports Council will be announced within a few days. It is not known whether the new list will include additional items of iron and steel but it is reported that it will embrace cotton and other materials employed in the manufacture of munitions.

## LABOR AND THE DRAFT

### Many Workers in Industrial Plants Are Going Into the Army

CHICAGO, Aug. 20.—A local draft appeal board has requested from Washington a ruling in the case of 200 claims for industrial exemption which were filed with it by the Western Electric Co., Chicago, on behalf of employees who have been certified for military service. It was stated that the Western Electric Co. has 9000 employees, of which number about 6000 are of selective military age. Of the latter number, about 600 are expected to be called out in the first quota, 200 of them being diemakers and other skilled workmen who are needed to enable the fulfillment of Government orders.

There is a great scarcity of electricians, a situation which has been felt by some of the local steel mills and other industries. Meanwhile the Government wants more of this class of workers. At one of the large local mills, the disposition has been to let the men depart freely for military service where their places can be filled by others with a reasonable amount of training. Many valuable machinists have joined the colors, causing some embarrassment in mill repairs.

The American Car & Foundry Co., Terre Haute, Ind., is advertising for women workers. About 400 are wanted for various departments, where they will be paid the same wages as men.

The strike of the polishers at the Remington Bridgeport Works of the Remington Arms Union Metallic Cartridge Co. has not been settled, and it is reported that a Federal mediator is expected to start new negotiations for a settlement. The machinists' strike at the Lake Torpedo Boat Co. is also still in force, and it is reported that the union machinists have sent J. J. Keppler, vice-president of their organization, to Washington to lay their case before the Navy Department.

All employees at the Government Arsenal, Springfield, Mass., earning less than \$1,200 a year, have received a 10 per cent increase in wages and a 5 per cent increase has been given to workmen earning between \$1,200 and \$1,800. There has been no complaint concerning piece rates, but the armorers have been engaged for months in an endeavor to raise the day rates.

It is reported that the Fore River Shipbuilding Corporation will put into effect about Oct. 1 the same wage schedule that is being prepared for the Charlestown Navy Yard. The men will get time and one-half for overtime up to four hours and double time after that, also double time for Sundays and holidays. The average pay is expected to be about \$4.50 a day.

Wages for puddling for August and September in England will be \$4.25 per ton, all other mill and forge wages remaining unaltered. To this is to be added 12c. per ton bonus. The average net selling price for May and June of bars, angles and tees, plates and sheets, hoops, strips and miscellaneous forms was \$74.35 per ton, figuring the normal rate of exchange.

The Youngstown Sheet & Tube Co., Youngstown, Ohio, has sunk two shafts on its coal property in Greene County, Pa., which it proposes to develop rapidly. The two shafts are being sunk by the Dravo Construction Co., Pittsburgh, while Stone & Webster of Boston have a contract for building about 150 houses for miners.

The formal announcement of the merging of the Columbus Iron & Steel Co. with the American Rolling Mill Co., Middletown, Ohio, has been issued. Correspondence should be addressed to the American Rolling Mill Co., Columbus Works, Columbus, Ohio.

## FEDERAL SHIPYARD BEGUN

### Contracts Let and Work Proceeds on Shipbuilding Plant Backed by Steel Corporation

More than 200 men are now at work on the site of the Federal Shipbuilding Co.'s plant, Hackensack Meadows, New Jersey, and the place resembles a mining camp. Temporary buildings have sprung up almost over night. Additional workmen will be employed as rapidly as possible, and every effort will be made to complete the shipbuilding plant, which, according to present plans, is expected to be one of the largest in the world, on scheduled time. The schedule calls for completion of shipways in a few months, so that keels may be laid for initial launchings about April 1, 1918. Two vessels are expected to be ready for service on June 1, 1918, and from that time on the plant will turn out steel cargo-carrying vessels with greater rapidity than has ever been attained in the shipbuilding industry in the United States.

The United States Steel Corporation, which organized and financed the Federal Shipbuilding Co., is said to have provided \$10,000,000 for initial outlays at the plant. Ten steel shipways, about 500 ft. long, are being put up by the Fraser, Brace Co., 1328 Broadway. The shop buildings are being constructed by Post & McCord, Inc., 101 Park Avenue, New York, and structural steel for shipways and buildings is being furnished by the American Bridge Co., which is reported to be giving precedence to this work. The buildings will require 10,000 tons of steel.

Robert MacGregor, vice-president and general manager of the company, received his early shipbuilding training in the yards of Scotland, and it is said that the Federal plant will be patterned to a considerable extent after the best of the plants on the Clyde. So far as possible, everything for the ships will be manufactured on the ground. Plates and shapes will be fabricated in the company's own plate shop, wood-working will be done on the premises and even marine boilers and engines and such supplies as electric fittings will eventually be made in the Federal shops.

The plant is located on the Hackensack River, south of the Lincoln Highway. The site is bounded on one side by the tracks of the Central Railroad of New Jersey, and there will be ample sidings for simplifying the traffic problem. An indenture of 1000 ft. is being made into the land for a basin in which five or six ships can be simultaneously fitted out after they have been launched.

The plate shop is to be 165 x 800 ft., with a mold loft 126 x 800 ft. on the second floor. At one end of the plate shop will be a furnace building, 165 x 150 ft., one story. The machine shop will be 125 x 150 ft., one story and galleries. The boiler shop will be 160 x 500 ft., one story; the forge shop, 150 x 300 ft., one story; the power house, 100 x 200 ft.; the rigging loft, 50 x 150 ft., one story; the brass and iron foundry, 100 x 300 ft., one story; the copper and tinsmithing shop, 50 x 150 ft., two stories; the joiner and carpenter shop, 100 x 150 ft., two stories; the main office building, 70 x 500 ft., two stories; a main storehouse, 50 x 150 ft., two stories, and two branch storehouses, each 20 x 50 ft., two stories. The buildings are to be of steel framework with glass, iron and terra cotta sides, which will be covered with stucco. The roofs will be of wood with slag or asbestos covering.

Power for the plant will be supplied by the Public Service, Newark. All machinery will be electrically operated.

E. H. Gary, James A. Farrell, Joshua Hatfield, Robert MacGregor, Richard Trimble, August Ziesing and W. J. Filbert are directors of the Federal Shipbuilding Co. E. H. Gary is president; Richard Trimble is treasurer, and W. J. Filbert secretary.

The American Car & Foundry Co. has advanced the wages of all employees 10 per cent at its Milton, Pa., works, commencing the present month. About 1100 men are affected.



# Iron and Steel Markets

## STEEL PRICES TO ALLIES

### Issue Raised on Italian Order

#### Lower Prices for Semi-Finished Steel and Resale Pig Iron

The President's announcement of a \$2 base on bituminous coal instead of the concession of a \$3 price made by the operators is no surprise and it does not furnish the key to the vastly more complicated problem of steel prices. Coke prices, it is to be expected, will be fixed in line with coal, but as the fixing of a low price for coke will not increase the supply and may lessen it, the effect on the pig-iron market is yet to be determined.

Cheaper coal, however, will mean lower cost in melting and heating operations at steel works and hence some revision of cost sheets now in the hands of the Government.

While the steel trade waits for the Government to decide what it will pay for munition and ship steel, and expects that decision soon, the situation as to prices of steel for the Allies and the public is in no respect clearer. The Government's advisors are working to avoid a direct legal issue as to the taking of orders from the Allies at the same prices charged the Government, but two developments of the week indicate that the situation cannot be allowed to drift much longer.

The first of these was the practical suspension of the activities of the American Iron and Steel Institute's committee on steel, which has been the distributing medium for Government orders for war and ship steel. The question had been raised whether under the Lever bill members of this committee could legally take part in negotiating Government contracts with their respective companies. The Council of National Defense, to which the steel committee is attached, is satisfied of the legality of present procedure, but an authoritative ruling is still awaited.

A second important development was the holding up of the Government's orders for 10,000 tons of annealed wire and 20,000 tons of wire rods to be furnished to Italy. Half of this had been accepted by the manufacturers at prices to be determined later, with the proviso that the Government actually place the order and become responsible for payment. It was found that no appropriation existed which could be drawn upon to buy steel for a foreign government. Meantime the needs of the Allies in various forms of steel are pressing.

In the past week the last 15,000-ton lot in a total of about 175,000 tons of plates and shapes lately given out by the Shipping Board was placed in the Chicago district. The next distribution, which will come later in the year, will involve 400,000 tons for the standardized ships which are next

in the board's program. The American Bridge Company is to hurry 10,000 tons of fabricated work for the new yard of the Federal Shipbuilding Company.

For the Government's railroad in France 3000 more standard gage cars have been placed. The 5000 cars yet to be bought are expected to be distributed shortly. The 20,000 tons of 25-lb. rails for portable track are still to be ordered and meantime quick delivery is wanted on 1000 tons of 35-lb. rails for the French line.

The French Commission wants 2000 tons of plates, and inquiries are noted from Italy for 5000 to 15,000 tons of 2-mm. to 3-mm. wire, 5000 tons of 4-in. billets, and 10,000 boxes of double-size tin plates.

Active inquiries in the week from Japanese sources for wire, chain rods, rivet rods, as well as plates, are not taken to mean that early adjustment of the embargo is expected, but rather the testing of prices for weak spots. It is understood that there are some plans for the rolling and storage of considerable tonnages of finished steel of which export is now prohibited.

As in previous weeks, the market has shown no significant change in prices, and in this respect interest has centered in pig iron, scrap and semi-finished steel. At Pittsburgh, offerings of billets and sheet bars have been freer, and prices are off \$20 to \$25 from the highest point reached. Three 1000-ton sales of billets are reported at \$80. Large consumers of billets and sheet bars are having steel shipped to them faster than they can use it.

Any softening of pig-iron prices is usually found in resale transactions. Cases are cropping up in which there was overbuying, and not a little Southern iron has sold at concessions on this account. Embargoed export iron likewise is coming upon the market, and can only be moved at less than recent prices. The Government has placed 10,000 tons additional foundry iron in the Middle West at \$35, and an effort is being made to gather up 40,000 tons of Bessemer iron for export to Italy. Bessemer iron has sold at \$53 at Valley furnace, representing a decline of \$2.

### Pittsburgh

PITTSBURGH, Aug. 21 (*By wire*).

Conditions in the steel trade are in direct contrast with those existing a month or more ago. Up until early July, new demand for iron and steel products was fairly heavy, specifications were coming in actively and the whole steel trade was moving along nicely with prices firm. Then came the announcement from Washington that the Government might regulate steel prices on both domestic and export business, and business at once practically stopped and is still in that condition. With the possible exceptions of pig iron and semi-finished steel, specifications are quiet and there is very little new demand for finished steel of any kind, consumers not buying a pound that they can possibly avoid.

## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Aug. 22, 1917.	Aug. 15, 1917.	July 18, 1917.	Aug. 23, 1916.
No. 1 X, Philadelphia...	\$53.00	\$53.00	\$54.50	\$19.50
No. 1 Valley furnace...	53.00	53.00	55.00	18.25
No. 2 Southern, Cin'ti...	49.90	49.90	49.90	16.40
No. 2 Birmingham, Ala.	47.00	47.00	47.00	13.50
No. 2 furnace, Chicago*	55.00	55.00	55.00	18.00
Basic, del'd, eastern Pa.	50.00	50.00	50.00	19.00
Basic, Valley furnace...	52.00	52.00	53.00	18.00
Bessemer, Pittsburgh...	53.95	55.95	57.95	21.95
Malleable Bess., Ch'go*	55.00	55.00	55.00	19.00
Gray forge, Pittsburgh...	46.95	46.95	47.95	18.70
L. S. charcoal, Chicago...	58.00	58.00	58.00	19.75

Rails, Billets, etc. Per Gross Ton:	Aug. 22, 1917.	Aug. 15, 1917.	July 18, 1917.	Aug. 23, 1916.
Bess. rails, heavy, at mill	38.00	38.00	38.00	38.00
O-h. rails, heavy, at mill	40.00	40.00	40.00	40.00
Bess. billets, Pittsburgh.	80.00	85.00	100.00	45.00
O-h. billets, Pittsburgh.	80.00	85.00	100.00	45.00
O-h. sheet bars, P'gh....	85.00	85.00	105.00	45.00
Forging billets, base, P'gh	115.00	125.00	125.00	69.00
O-h. billets, Phila.....	90.00	100.00	110.00	46.00
Wire rods, Pittsburgh....	90.00	90.00	95.00	55.00

### Finished Iron and Steel

Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Iron bars, Philadelphia..	5.185	5.159	4.659	2.659
Iron bars, Pittsburgh....	4.75	4.75	4.75	2.60
Iron bars, Chicago.....	4.50	4.50	4.50	2.35
Steel bars, Pittsburgh....	4.00	4.50	4.50	2.60
Steel bars, New York....	4.695	4.669	4.669	2.769
Tank plates, Pittsburgh..	9.00	9.00	9.00	4.00
Tank plates, New York..	10.195	10.169	10.169	4.169
Beams, etc., Pittsburgh..	4.00	4.50	4.50	2.50
Beams, etc., New York..	4.669	4.669	4.669	2.669
Skelp, grooved steel, P'gh	4.00	4.00	4.00	2.35
Skelp, sheared steel, P'gh	6.00	6.00	6.00	2.45
Steel hoops, Pittsburgh..	5.75	5.75	5.25	3.00

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	Aug. 22, 1917.	Aug. 15, 1917.	July 18, 1917.	Aug. 23, 1916.
Cents.	Cents.	Cents.	Cents.	
Sheets, black, No. 28, P'gh	8.50	8.50	8.50	2.90
Sheets, galv., No. 28, P'gh	10.00	10.00	10.00	4.15
Wire nails, Pittsburgh...	4.00	4.00	4.00	2.60
Cut nails, Pittsburgh....	4.65	4.65	4.65	2.60
Fence wire, base, P'gh...	3.95	3.95	3.95	2.55
Barb wire, galv., P'gh...	4.85	4.85	4.85	3.45

### Old Material, Per Gross Ton:

Iron rails, Chicago.....	\$40.50	\$40.50	\$44.00	\$18.50
Iron rails, Philadelphia.	45.00	45.00	45.00	20.00
Carwheels, Chicago....	29.00	30.50	35.00	11.50
Carwheels, Philadelphia.	34.00	35.00	35.00	15.50
Heavy steel scrap, P'gh.	31.00	31.00	38.00	16.00
Heavy steel scrap, Phila.	33.00	31.00	32.00	14.75
Heavy steel scrap, Ch'go	30.00	29.00	32.00	15.25
No. 1 cast, Pittsburgh....	30.00	30.00	32.00	14.50
No. 1 cast, Philadelphia..	33.00	33.00	35.00	16.00
No. 1 cast, Ch'go (net ton)	24.00	23.00	28.50	11.50
No. 1 RR. wrot, Phila....	45.00	45.00	48.00	20.00
No. 1 RR. wrot, Ch'go (net)	34.00	33.50	37.00	15.25

### Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt...	\$15.00	\$16.00	\$11.00	\$2.85
Furnace coke, future....	10.00	10.00	10.00	2.50
Foundry coke, prompt...	14.00	14.00	12.00	3.25
Foundry coke, future....	12.50	10.00	10.00	3.50

### Metals,

Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York.	26.50	28.00	26.50	27.25
Electrolytic copper, N. Y.	26.50	28.00	26.50	26.87½
Spelter, St. Louis .....	8.50	8.50	8.62½	9.50
Spelter, New York.....	8.75	8.75	8.87½	9.75
Lead, St. Louis.....	10.50	10.75	10.37½	6.50
Lead, New York.....	10.62½	10.87½	10.50	6.62½
Tin, New York.....	61.75	62.25	62.50	38.50
Antimony (Asiatic), N. Y.	15.00	15.00	16.00	13.50
Tin plate, 100-lb. box, P'gh.	\$10.00	\$12.00	\$12.00	\$6.00

This has all come about because of the uncertainty as to what action the Government will take in regard to steel prices. It is not believed the Government will fix prices at which steel shall be sold to domestic consumers, but the fear that it may do so has put an effectual brake on new business. It is believed the Government will make its announcement about steel prices within a week or ten days at the farthest, and no matter what it may decide as to what prices shall rule for steel, its announcement will remove the tension that has existed for nearly a month, and may result in business starting up again. Bessemer iron at \$52 to \$53, billets and sheet bars at \$80 to \$85, and finished steel selling at fabulous prices are all taken as representing a fictitious market brought about by the fact that the export demand for steel products had been enormously heavy, and domestic consumers in order to get material were bidding against themselves for some months to get the mills to put them on their books, and this pushed prices up at a very rapid pace. As soon as the Government takes hold and names prices it will pay for steel for its own uses and also for the Allies, the market is likely to settle down to a more legitimate basis, and no doubt lower values will come. We do not look for any decided break in prices, but rather expect to see a gradual leveling of the market to a more reasonable basis. The embargo declared by the Government recently against export shipment on several kinds of steel has released a good deal of semi-finished steel in the forms of billets and sheet bars, and this has resulted in market prices going from \$20 to \$25 per ton below the highest figure reached. It also has resulted in some fair-sized lots of pig iron and steel being turned back for resale, and this has affected prices and caused a decline. Hardly enough business in pig iron, steel, finished material and in raw material, such as coke and scrap, has been done in the past month to fix prices. Prompt furnace coke has been held up in price because

of the scarcity of cars and labor, but heavy steel scrap has gone off \$16 to \$18 per ton over the high prices reached some time ago. The recent embargo against shipments of scrap declared by the railroads has greatly helped to depress the market, as dealers cannot make shipments on old contracts, except by getting special permits from the railroads over which the scrap is to be moved. Prices on finished steel have as yet shown no material decline, but are softer and will likely be lower in the very near future.

**Pig Iron.**—The local pig-iron market is still very quiet, but several fairly large inquiries are in the market for Bessemer iron and one sale has been closed of about 1500 tons for delivery over the next three months at \$53, or less, at Valley furnace. It is verified that Bessemer iron has been offered as low as \$52, Valley furnace, or \$52.95, Pittsburgh, and basic iron at less than \$52, Valley furnace. Several sales of Bessemer may go through this week which will give a better line on the market than it has been possible to get for some time. It is known that the United States will be called on to furnish large quantities of Bessemer and basic iron to our Allies, notably Italy, and it is said that several large lots of Bessemer iron for export shipment may be wanted within a short time. The Government lately placed 10,000 tons of foundry iron with Western furnaces for early shipment. Some in the trade look for an active pig iron market early in October or before, and if the present heavy consumption of steel is maintained, there may be higher prices on pig iron before this year ends. It is pointed out that there has been a very heavy increase in output of open-hearth steel this year without corresponding increase in output of pig iron. For this reason, it is figured out that an active demand for Bessemer and basic iron for steel making purposes in the last three or four months of this year may bring prices on iron to a higher point



than now ruling. We have lowered our price on Bessemer iron \$2 per ton, or to the basis of \$53, Valley furnace, as there is no doubt that Bessemer iron can be bought without any trouble at that price or even lower.

Standard Bessemer iron, \$53; basic, \$52; No. 2 foundry, \$53; malleable Bessemer, \$53, and gray forge, \$46, all at Valley furnace, the freight rate for delivery in the Pittsburgh and Cleveland districts from Valley furnaces being 95c. per ton.

**Billets and Sheet Bars.**—The offerings of both billets and sheet bars in the open market are getting freer right along, several large consumers of billets and sheet bars stating that steel is being shipped into them faster than they can use it, and they are offering some of it for resale. One leading interest recently offered 4000 to 5000 tons of billets and sheet bars for prompt shipment on the basis of \$85 Pittsburgh. They were unable to make any sales at this figure, but finally sold 1000 tons of 4 x 4 in. soft open-hearth billets at \$80 per gross ton, and a sale of 1000 tons of narrow slabs is reported at the same price. Another interest reports a sale of 1000 tons of soft Bessemer billets on the basis of \$80 Pittsburgh. There seems to be more steel offering just now than there is a demand for and prices are soft. There has also been a decline in prices of forging billets, though not to the same extent as in soft billets. We are advised that ordinary carbons forging billets have been offered at as low as \$115 Pittsburgh, with an intimation that a firm offering a lower price might be named. We have not heard of any sales of forging billets in this market for some time.

We now quote soft Bessemer and open-hearth billets at \$80, and soft Bessemer and open-hearth sheet bars at \$85, maker's mill, Pittsburgh or Youngstown. We quote forging billets at nominally \$110 to \$115 per ton for ordinary sizes and carbons, f.o.b. maker's mill.

**Steel Rails.**—The demand for new and re-rolled light rails has quieted down very much and prices are only fairly firm. The mills are filled up for some months ahead, but specifications against contracts have fallen off and it is said in some cases there have been cancellations of contracts for both new and re-rolled light rails placed sometime ago at high prices. It is understood the local mill will furnish a considerable part of about 20,000 tons of 25 lb. rails for use in building portable tracks in France. It is said no price has been fixed on these rails, but they are to be shipped out in about six weeks and the price will be agreed on later. The Cambria Steel Co., Johnstown, Pa., will likely roll part of this order. Both the Carnegie and Cambria companies took a good part of the 150,000 tons of 80 lb. rails that are to go to France. A double track railroad is to be built from some prominent port in France, probably Havre, to positions back of the firing lines for the movement of American troops and war supplies. This will result in a much quicker transportation of troops and supplies than by trucks, which are now used in France for this purpose. Prices on new light rails and standard sections are given on page 455.

**Ferroalloys.**—The new demand for ferroalloys of all kinds is quiet. A sale has been made of 350 to 400 tons of 80 per cent domestic ferromanganese for delivery in first quarter at \$350 per gross ton delivered. For prompt shipment domestic ferromanganese is firm at about \$400; for first quarter, \$375; and for first half of next year \$350 delivered. It is said that some fairly large contracts for 50 per cent ferrosilicon have been made lately for delivery all through next year at \$130 delivered, this being the price of the leading producer. Small lots of 50 per cent ferrosilicon are being sold at \$175 to \$185 delivered. We quote 18 to 22 spiegeleisen at \$75 to \$80 delivered. There is not much new demand for Bessemer ferrosilicon or silvery iron, all consumers being pretty well covered over this year.

We quote 9 per cent Bessemer ferrosilicon at \$89, 10 per cent \$90, 11 per cent \$95, 12 per cent \$100, 13 per cent \$105, 14 per cent \$115, 15 per cent \$125, and 16 per cent \$135. We now quote 7 per cent silvery iron at \$84 to \$89, 8 per cent \$85 to \$90, 9 per cent \$86 to \$91, 10 per cent \$87 to \$92, 11 and 12 per cent \$88 to \$93. All f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, and Ashland, Ky., these furnaces having a uniform freight rate of \$2 per gross ton for delivery in the Pittsburgh district.

**Structural Material.**—New inquiry is quiet and very little new work is being placed. It is said the American Bridge Co. is bidding on very little except Government work, and it will be called on to fabricate and erect the steel buildings for the Federal Shipbuilding Co. to be built in Hackensack Meadows, N. J., which will take a good part of its capacity for some months after active work on the plant starts. Several other local fabricators are also bidding on very little new work, stating they have about all the orders they can turn out over the next five or six months. The McClintic-Marshall Co. has taken 15,000 to 20,000 tons of steel for extensions to sheet mill buildings of the Whitaker-Glessner Co. of Wheeling, W. Va. The Jones & Laughlin Steel Co. has also taken about 2700 tons of reinforcing steel bars for a causeway at Galveston, Texas. Prices on beams and channels are easier and mill prices now range from 4c. to 4.50c. depending on the order and how soon the material is wanted.

**Plates.**—The plate market is easier in both demand and prices. The Government embargo on plates has made available large quantities of plates that would have gone abroad but that can now be had by domestic consumers. The pressure on the mills for plates by the new demand has eased up very much and it is now possible to get fairly prompt delivery from mills that sometime ago were refusing to quote. Of the order for 9000 steel cars for France, the Pressed Steel Car Co. has taken about 1600 cars, which will require 15,000 to 16,000 tons of plates and shapes to be furnished by the Carnegie Steel Co. No domestic orders for steel cars are being placed, and steel car builders say they would prefer not to take on any more domestic orders until they know more about what demands will be made on them by our Government for cars for its own use and for the Allies. We now quote ¼ in. and heavier sheared plates for fairly prompt delivery at 8c. to 9c. at mill, but possibly the lower price might be shaded by a few mills on certain sizes for delivery over the next two or three months. Small lots of sheared plates from warehouse bring 10c. to 11c., Pittsburgh.

**Sheets.**—Nearly all the new business that is being placed in sheets is coming from the Government, the domestic demand being quiet and specifications are not as active as they were some time ago. The consuming trade is evidently looking for lower prices on all grades of sheets to come very soon after the Government has announced the prices it will pay for steel. It is said that so far there have been very few cancellations of contracts of sheets placed some time ago at relatively high prices, but the trade is pursuing a conservative policy in regard to placing new orders. Several orders for Bessemer black sheets No. 28 gage have lately been placed at about 8c. at mill, which is slightly under what has been regarded for some time as minimum of the market. Prices on sheets to the domestic trade, which are none too firm, are given on page 455.

**Tin Plate.**—Food Administrator Hoover has called a meeting of the tin plate makers to be held in Washington, Friday of this week, Aug. 24. While the purpose of the meeting was not definitely stated, it is believed to be to talk over the present situation in tin plate and especially in regard to whether the mills will be able to furnish promptly bright plate to packers of perishable goods as fast as they will need it. The current domestic demand for tin plate is dull, but export inquiry is heavy from the Orient, India and other countries. A recent sale is reported of 22,000 base boxes of tin plate for export that netted \$17.40 at mill. All the tin plate mills are filled up for the year, and with obligations now on their books, some mills are sold up into April next year. We quote small lots of bright plate from stock at \$10 to \$11 per base box at mill, while prices in effect onterne plate are given in detail on page 455.

**Iron and Steel Bars.**—Mills report that the new demand for both iron and steel bars has fallen off a good deal, due to the uncertainty as to what action the Government will take as regards prices for steel. Specifications from the implement trade are fairly active, but consumers believe that lower prices on both iron and steel bars are coming in the near future and are placing orders conservatively. Mill prices on steel

bars range from 4c. to 4.50c., but local mills for some months have been furnishing large quantities of steel bars to the Government at the price of 2.50c. at mill agreed upon some months ago. Mill prices in carlots and larger lots on iron and steel bars to the domestic trade are given on page 455.

**Hoops and Bands.**—There is not much new demand, consumers being covered, but the supply of both hoops and bands for prompt delivery is larger now than it has been for some time. We quote steel hoops in small lots for prompt shipment at 5.50c. to 6c. and steel bands 5c. to 5.25c., extras on the latter per the steel car card.

**Muck Bar.**—Prices are lower, due to the decline in mill iron. We now quote best grades of muck bar made from all pig iron at \$85 to \$90 per gross ton Pittsburgh.

**Wire Rods.**—Three local mills will furnish nearly half of the 20,000 tons of wire rods for Italy placed lately by the Government, the price not having been fixed, but will be after the Federal Trade Commission has made public its findings in regard to steel cost. The domestic demand for wire rods is fairly active, but not as heavy as some time ago. We note several sales of soft open-hearth and Bessemer rods at \$90 to \$95, maker's mill, while high carbon rods made from special steel bring \$110 to \$115, maker's mill. Prices on rods are given in detail on page 455.

**Wire Products.**—The situation in the wire and wire nail trades is very quiet and specifications against contracts are dull. The jobbing trade is hesitating very much in specifying against contracts for wire nails placed with the independent mills some months ago at \$3.50 base per keg, while the price of the American Steel & Wire Co. is \$3.20 per keg. Jobbers say they cannot compete if they have to pay 30c. higher for nails than their competitors and are insisting they should have a reduction in the price. Very little new business was placed at the \$4 price or in bright basic wire at the \$4.05 price, and some in the trade believe that these prices may soon disappear. Prices quoted on wire and wire nails by the independent mills, but which are now largely nominal, prices of the American Steel & Wire Co. being \$16 per ton less, are given on page 455.

**Shafting.**—The Government has placed fairly heavy orders for cold rolled shafting for making airplanes and has also been a very heavy buyer of hot rolled material for making Government trucks. Makers of shafting say they are well sold up for the remainder of this year and desire to conserve a good part of their output for the Government, so that the falling off in new demand is not as yet being seriously felt. Specifications from the automobile trade are dull. Discounts remain at 10 to 5 per cent off list, depending on the order.

**Railroad Spikes and Track Bolts.**—Three of the local makers of spikes participated in the recent Government order for 53,000 kegs of spikes for the American railroad to be built in France, but one other maker did not bid on the inquiry, as its spike mill is being removed to another location. The new demand for railroad spikes is dull, but for boat spikes is very active. Spike makers are still conserving a large part of their output over this year and in the first half of next year for the expected needs of the Government. Prices on railroad spikes and track bolts are given in detail on page 455.

**Cold Rolled Strip Steel.**—The new demand has fallen off a good deal from domestic consumers, but the Government is still placing heavy orders for both hot and cold rolled material. Consumers are well covered over this year on contracts and specifications are fairly active. So far, there have been very few cancellations in contracts due to the general belief that prices may be lower in the near future.

On contracts, mills are quoting 9c. at mill, but on small current orders prices range from 10c. up to 12c. at mill. Terms are 30 days, less 2 per cent off for cash in 10 days when sold in quantities of 300 lb. or more.

**Nuts and Bolts.**—Makers say the new demand is not nearly so heavy as sometime ago, while specifications against contracts are still fairly active. The trade is evidently looking for lower prices on nuts and bolts in the near future and is not inclined to place new orders

until more is known as to what prices the Government will fix on steel. It is said present prices on nuts and bolts are being firmly held and discounts to the large trade are given on page 455.

**Coke.**—The supply of cars in the Connellsville region last week was very short with the result that prices on blast furnace coke for prompt shipment held very high during the entire week and demand was heavy. Several large steel concerns that are heavy buyers of coke ran very short in the latter part of last week and as high as \$15 and \$16 per net ton at oven was paid for high grade blast furnace coke for prompt shipment three or four days in the past week. Tuesday there was a sale of 100 cars of high grade blast furnace coke for spot shipment at \$15 per net ton at oven. One large coke producer that is furnishing coke to three or four consumers, fixing the price from day to day, charged these consumers \$12 per net ton at oven for all blast furnace coke shipped to them in July. A contract for a considerable tonnage of foundry coke for delivery over six months from September was made a few days ago at \$12.50 per net ton at oven. We now quote high grade blast furnace coke for prompt shipment at \$15 per net ton at oven, but nothing is being done in contracts. Best grades of 72 hr. foundry coke are held at about \$14 for prompt shipment and we quote the market on contracts at \$12.50 per net ton at oven, but contracts were made several months ago for best grades of 72 hr. foundry coke for last half of this year at \$9 and \$10 per net ton at oven. There is still a great scarcity of coal miners and coke labor and some coke producers are not getting out more than 60 to 70 per cent of the amount of coke they should be making. *The Connellsville Courier* gives the output of coke in the upper and lower Connellsville regions for the week ending Aug. 11 at 441,953 tons, an increase over the previous week of 6880 tons.

**Wrought Pipe.**—The Manufacturers Light & Heat Co., this city, supplier of natural gas, has put out an inquiry for its supply of line pipe and other tubular products for delivery into late 1918. Included in the inquiry are 26,000 ft. of 10-in. pipe, 35-lb. to the foot, 100,000 ft. of 8½-in. 24-lb., 30,000 ft. 6½-in. 20-lb., 150,000 ft. 6½-in. 17-lb., 50,000 ft. 5 3/16-in. 17-lb., 175,000 ft. 4-in. tubing, 100,000 ft. 2-in. tubing, 75,000 ft. 6-in. standard line pipe, 100,000 ft. 4-in. standard line pipe, 50,000 ft. 3-in. standard line pipe, 100,000 ft. 2-in. line pipe, 35,000 ft. 1½-in. merchant pipe, 75,000 ft. 1¼-in. merchant pipe, and 6000 ft. 1-in. merchant pipe. As yet, the prospective buyer has not covered for any part of this large inquiry, and expects to have some trouble in finding mills that will take it, owing to their filled up condition, and the fact that they are conserving as much of their output as possible to meet Government demands. All the above pipe is for delivery up to Sept. 30, 1918, and it may be some little time before the inquiry is covered. The Government is still buying more or less pipe and tubing, all of which the mills are shipping out about as promptly as the orders are placed. Recently a fairly large lot of 10-in. pipe was divided between the leading interest and the independent mills. None of the pipe mills has any lap-weld pipe to sell for delivery this year, and on some sizes mills are sold up far into next year. On butt-weld pipe, largely used in building operations, the demand is quiet owing to the great falling off in new building all over the country. On butt-weld sizes of iron and steel pipe, most mills can make delivery in 10 to 12 weeks, or less, from date of order. Discounts on steel pipe being quoted by most of the independent mills, prices of the National Tube Co. being much lower, and also discounts on iron pipe, as adopted by all the makers of iron pipe on July 1, are given on page 455.

**Boiler Tubes.**—None of the mills rolling iron and steel boiler tubes has any to offer on new orders over the next 6 to 12 months, but can occasionally fill small orders for certain sizes from stock. On seamless steel tubes, mills are sold up for a year to 18 months. The Government has been a very heavy buyer of boiler tubes to cover the vessel program which has started, and several makers of boiler tubes having Government orders on their books will not be called on to fill these or before very late next year, or early in 1919. Fabulous



prices are being paid for small lots of iron and steel boiler tubes from stock, and also on oil country goods for fairly prompt shipment. The high prices and scarcity of casing and other oil country goods have stopped a good deal of new drilling that otherwise would have gone forward. Nominal discounts, which give prices very much below those that are actually ruling, are given on page 455.

**Old Material.**—The embargo recently declared by all the railroads against shipments of scrap, even over their own lines, noted in this report last week, has almost stopped shipments of scrap. All the leading railroads serving the Pittsburgh district are absolutely refusing to accept any shipments of scrap for delivery on their own lines, unless the shipper secures a special permit from the superintendent of transportation. In addition, the consumer to whom the scrap is to be shipped must furnish a letter to the superintendents of transportation of the railroads, stating they are ready to accept the shipment and unload the cars promptly. Reports printed recently that the new demand for scrap had improved, and that prices had shown some advance, were entirely incorrect. Not enough scrap has been sold to consumers in this district in the past three or four weeks to accurately fix prices, and in the meantime the market has steadily declined, and is still very soft. At the same time, dealers know it is useless to try to force sales of scrap, and are simply resting on their oars, waiting until the situation changes. Three or four of the larger dealers in this district report they have not made an important sale of scrap for nearly a month, and in this condition prices quoted are largely nominal. Dealers quote for delivery in Pittsburgh and other consuming points that take Pittsburgh freight rates, per gross ton, as follows:

Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered .....	\$31.00 to \$32.00
No. 1 foundry cast .....	30.00 to 31.00
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa. ....	38.00 to 40.00
Hydraulic compressed sheet scrap....	25.00 to 26.00
Bundled sheet scrap, sides and ends, f.o.b. consumers mill, Pittsburgh district .....	23.00 to 24.00
Bundled sheet stamping scrap.....	21.00 to 22.00
No. 1 railroad malleable stock.....	26.00 to 27.00
Railroad grate bars .....	18.00 to 19.00
Low phosphorus melting stock.....	41.00 to 42.00
Iron car axles .....	45.00 to 46.00
Steel car axles .....	45.00 to 46.00
Locomotive axles, steel .....	52.00 to 53.00
No. 1 busheling scrap.....	24.00 to 25.00
Machine-shop turnings .....	18.00 to 19.00
Cast iron wheels .....	31.00 to 32.00
Rolled steel wheels .....	36.00 to 37.00
*Sheet bar crop ends.....	41.00 to 42.00
Cast iron borings .....	19.00 to 20.00
No. 1 railroad wrought scrap.....	32.00 to 33.00
Heavy steel axle turnings.....	23.00 to 24.00
Heavy breakable cast scrap.....	24.00 to 25.00

\*Shipping point.

## Chicago

CHICAGO, Aug. 20.

Buyers and sellers of steel and allied products are awaiting definite action on the part of Washington, particularly in regard to prices, and the hope is fervently expressed that some basis on which to proceed will be made known soon. That the Government will deal fairly with the producers is quite generally believed. Indications of a slightly easier market are in evidence, a result, it is stated, of the Government's embargo on exports. An Eastern mill which is a factor in the West, expects to have soon some plates to offer. It is offering light rails, but at prices ranging from \$95 to \$100. It is reported that some of the builders with whom cars for shipment to France were placed have had their orders increased 50 per cent. The agricultural implements' interests are feeling around for materials, particularly bars, but it is not felt they will buy for 1918 until the price atmosphere has cleared. Some authorities express the opinion that this industry erred in being slow in raising its prices; that if it had made advances as the market went up, it would not now be so apprehensive over the inevitable decline. One effect of the war has been to cause vast quantities of

hay to be baled, with a consequent heavy demand for bale ties. Rail carbon bars are in good demand except for concrete reinforcing. The taking of about 3000 tons of ferromanganese is reported, all domestic product, mostly for the first and second quarters, and the price has been advanced \$25 for first quarter delivery, or to \$375. Pig iron is quiet, and firmly held by first hands, but some resale lots have been sold at concessions, the iron coming from foundries where strikes have interfered with melting. Old material presents a healthier appearance, although dealers have been the chief buyers. The mills, while not yet buying scrap, are showing interest by stating what they will pay.

**Pig Iron.**—The situation in general is unchanged, first hands holding firmly to their quotations, but getting less inquiry than has come to them at any time in recent weeks. The Northern makers quote \$55, for basic, No. 2 foundry and malleable Bessemer, delivery this side of next July. It is reported that makers of agricultural implements find it none too easy to obtain malleable castings. The Southern furnaces quote \$50, Birmingham, for 1917 delivery of No. 2 foundry, and all the way from \$45 to \$50 for the first half. The chief feature of the market lies in the placing at concessions of resale lots of both Northern and Southern iron, the sellers being foundries which have serious strikes on their hands. One such foundry is in Chicago and another is in Milwaukee. Of course, there is not much iron made available in this way, but what has been offered has been quickly taken. In some cases, it is understood the resale price has been less than \$50, furnace. The Tennessee furnaces are in a bad way for lack of coke, which they plead in responding to the numerous letters sent to them urging that deliveries be hurried. One furnace in that predicament, has not banked, but it has been unable to make the high silicon iron which is its usual product. Throughout the South, the inadequate coke supply, lack of labor and shortage of cars harass the producers, the situation being most acute with the smaller furnaces. With their explanation for non-delivery, some Southern makers ask that they be apprised of any spot coke they can secure. A South Chicago steel mill is casting around for some basic, delivery in 1918. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic irons, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 1 to 4.....	\$58.00
Lake Superior charcoal, Nos. 5 and 6, Scotch and No. 1 soft or special.....	60.50
Northern coke foundry, No. 1.....	55.50
Northern coke foundry, No. 2.....	55.00
Northern coke foundry, No. 3.....	54.50
Northern high-phosphorus foundry .....	55.00
Southern coke No. 1 f'dry and 1 soft.....	55.00
Southern coke No. 2 f'dry and 2 soft.....	54.00
Malleable Bessemer .....	55.00
Basic .....	55.00
Low-phosphorus .....	\$90.00 to 93.00
Silvery, 8 per cent.....	82.75 to 83.00

**Ferroalloys.**—Some good-sized tonnages of 80 per cent ferromanganese have been placed with domestic makers, and \$350 has been withdrawn as the price for the first quarter. Quotations are now \$400 for delivery this year, \$375 for the first quarter (an advance of \$25) and \$350 for the second quarter. It is reported that a Birmingham mill took 600 tons, a Peoria mill about 800 tons, and Pittsburgh interests about 1500 tons, mostly for the first quarter and first half. Advices from England have been to the effect that not much must be expected from that quarter. Ten per cent Bessemer ferrosilicon is held around \$100, Jackson, Ohio.

**Plates.**—An Eastern mill holds to the belief that the Government embargo on exports will make delivery somewhat easier in the near future. Meanwhile prices range from 10c. to 10.50c. The leading interest and other large makers are not selling, except to the Government. Jobbers report that their stocks of plates and other materials are getting very low, and to them the situation looks as though it might become worse.

For Chicago delivery out of stocks jobbers quote 10c.

**Structural Material.**—The quotation, so far as there is any, hangs around 6c., Pittsburgh, or 6.189c., Chicago, but the leading makers are unanimous in saying they

are out of the market. It is learned that some of the carbuilders who recently received orders from the Government for cars to be shipped in knock-down form to France have had their orders increased by 50 per cent. It is believed that some, if not all, of the cars sent to France will be assembled in a plant which the Standard Steel Car Co. maintains in that country. For their diminishing stocks, jobbers continue to quote 6c. for material out of Chicago warehouses. Four structural lettings are announced, but they are all small, as follows:

Tumbling room for Scott Street Works of the American Steel & Wire Co., Joliet, Ill., 110 tons, to the American Bridge Co.

Power house building, for James S. Kirk & Co., Chicago, 139 tons, to the South Halsted Street Iron Works.

Steel work for a machine shop at Bingham, Utah, for the Utah Copper Co., 280 tons, to the Minneapolis Steel & Machinery Co.

Factory and power house for the National Lamp Works of the General Electric Co., Chicago, 280 tons, to A. Bolter's Sons.

**Bars.**—Mild steel bars are unchanged at 4.50c., Pittsburgh, or 4.689c., Chicago. Agricultural implement makers have been sounding the market for bars for 1918 delivery, but it is questionable how far they will go while the present uncertainty prevails as to prices. They have done some buying of rail carbon bars, the current market for which is about 4.50c., Chicago. The bedstead makers also have purchased this class of stock. The demand for concrete reinforcing bars is under normal. The quotations for iron bars range from 4.50c. to 5c., Chicago, and the market has been active, partly as a result of the scarcity of steel. Jobbers' quotations are unchanged.

We quote prices for Chicago delivery as follows: Soft steel bars, 4.50c.; bar iron, 4.50c. to 5c.; reinforcing bars, 4.50c., base, with 5c. extra for twisting in sizes  $\frac{1}{2}$  in. and over and usual card extras for smaller sizes; shafting list plus 5 per cent to plus 10 per cent.

**Wire Products.**—The situation is without change, the leading interest continuing to quote on the basis of \$3.20 for nails. Specifications for most products continue good, although fencing is not particularly active. The quotations of independent makers are based on \$4 per keg for nails. It is intimated that a new price may soon be announced on wire rods, but further than that the intimation does not go. The lack of new building, so generally reported, does not seem to have lessened the demand for nails to any appreciable degree. We quote as follows on the basis of \$4, Pittsburgh, for nails per 100 lb., to jobbers:

Plain fence wire, Nos. 6 to 9, base, \$4.189; wire nails, \$4.189; painted barb wire, \$4.339; galvanized barb wire, \$5.039; polished staples, \$4.339; galvanized staples, \$5.039; all Chicago, carload lots.

**Sheets.**—Hardly any change can be reported, except that one mill which was quoting 10.50c. for No. 28 galvanized has withdrawn that price, and only passes on inquiries after they have been submitted to the mill. The quotation for No. 28 black sheets is about 9.189c., Chicago, No. 10 blue annealed range from 8.939c. to 9.189c., Chicago. Jobbers have made no change in their quotations.

We quote for Chicago delivery out of stock, regardless of quantity, as follows: No. 10 blue annealed, 10c.; No. 28 black, 10c., and No. 28 galvanized, 11.50c.

**Rails and Track Supplies.**—Light rails from 12 to 45 lb. are procurable from an Eastern mill at prices ranging from \$95 to \$100. The leading interest also has placed some light rails, but at lower prices than those referred to. The quotations of the principal maker, with the exception of tie plates, follow:

Standard railroad spikes, 4.25c. base; small spikes, 4.50c., base; track bolts with square nuts, 5.25c., all in carloads, Chicago; tie plates, \$70 to \$90 f.o.b. mill, net ton; standard section Bessemer rails, Chicago, \$33, base; open hearth, \$40; light rails, 25 to 45 lb., \$65; 16 to 20 lb., \$66; 12 lb., \$67; 8 lb., \$68; angle bars, 3.25c., base.

**Bolts and Nuts.**—New business is light and expected to remain so until there is some definite outcome to the Government price-fixing program. Awaiting this action, large interests are holding up their orders for the first half of 1918, and it is felt there will be a rush to place contracts when the desired information is at hand. For prices and freight rates, see finished iron

and steel, f.o.b. Pittsburgh, page 455. Store prices are unchanged.

Store prices are as follows: Structural rivets, 5.50c.; boiler rivets, 5.60c.; machine bolts up to  $\frac{3}{8}$  x 4 in., 40-10; larger sizes, 35-5; carriage bolts up to  $\frac{3}{8}$  x 6 in., 40-2 $\frac{1}{2}$ ; larger sizes, 30-5; hot pressed nuts, square, \$3, and hexagon \$3 off per 100 lb.; lag screws, 50 per cent off.

**Cast-Iron Pipe.**—Minneapolis, Minn., is expected to enter the market for 1300 tons, although prices may prove a stumbling block. Wauwatosa, a suburb of Milwaukee, will buy 200 tons. The Government has placed about 500 tons of 6-in. pipe for its aviation camp at Grassland, Ill.

Quotations per net ton, Chicago, are as follows: Water pipe, 4 in., \$68.50; 6 in. and larger, \$65.50, with \$1 extra for class A water pipe and gas pipe.

**Old Material.**—The market is a peculiar one in that most of the buying is on the part of dealers who need material to close up contracts made at recent high levels, and they are willing to pay more than consumers will give at the present time. The situation is healthier because mills which would not consider business a few weeks ago are now at least willing to say what they will pay. While one or two items show some further decline, based on actual transactions, others show more strength. The railroad offerings continue moderate, the Wabash offering about 1000 tons, while the Grand Trunk and C. & A. have issued small lists. There appears to be sufficient material available, the main trouble being in getting cars in which to move it. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Old iron rails	\$40.50 to \$41.50
Relaying rails	50.00 to 55.00
Old carwheels	29.00 to 30.00
Old steel rails, rerolling	38.00 to 39.00
Old steel rails, less than 3 ft.	38.00 to 39.00
Heavy melting steel scrap	30.00 to 31.00
Frogs, switches and guards, cut apart	30.00 to 31.00
Shoveling steel	27.00 to 28.00
Steel axle turnings	21.00 to 22.00

Per Net Ton	
Iron angles and splice bars	\$38.00 to \$39.00
Iron arch bars and transoms	40.00 to 41.00
Steel angle bars	30.00 to 31.00
Iron car axles	40.00 to 41.00
Steel car axles	40.00 to 41.00
No. 1 railroad wrought	34.00 to 35.00
No. 2 railroad wrought	31.00 to 32.00
Cut forge	31.00 to 32.00
Pipes and flues	21.50 to 22.50
No. 1 busheling	25.50 to 26.50
No. 2 busheling	17.50 to 18.50
Steel knuckles and couplers	41.00 to 42.00
Steel springs	42.50 to 43.00
No. 1 boilers, cut to sheets and rings	20.50 to 21.00
Boiler punchings	31.00 to 32.00
Locomotive tires, smooth	40.00 to 41.00
Machine-shop turnings	16.50 to 17.50
Cast borings	16.50 to 17.50
No. 1 cast scrap	24.00 to 25.00
Stove plate and light cast scrap	17.50 to 18.00
Grate bars	17.50 to 18.50
Brake shoes	19.00 to 19.50
Railroad malleable	30.50 to 31.50
Agricultural malleable	23.75 to 24.75
Country mixed scrap	16.00 to 16.50

## Philadelphia

PHILADELPHIA, Aug. 20.

New business, particularly in iron, is almost at a standstill in this market. There is a constant demand for delivery, both in iron and steel, and continuous requests for anticipation of shipments, but new buying for domestic business is on a limited scale. Government work keeps coming along, and there is, of course, a large demand for materials to be used on work in which the United States or the allied Governments have an interest more or less direct. Bar iron, boat spikes and plates come under this classification, as does an inquiry from a large locomotive builder for approximately 650 tons of spring steel to be used in repairs to British locomotives.

**Pig Iron.**—Light inquiry and small sales sum up the week. Two or three carloads constitute a sizable sale in the foundry grades as things go, and the steel-making irons are still quiet with prices nominal. Prices which have ruled for the last few weeks have been maintained in the small transactions involving Pennsylvania iron,



while the only transaction reported in No. 2 X Virginia was made on a basis of \$52.50, furnace, which has been the recognized top in that grade. Small tonnages of off-grade Southern iron have been sold at \$41, Birmingham, and \$85 is reported as the price in a sale of copper-bearing low phosphorus. There have been no transactions in basic and standard low phosphorus. With the bulk of the furnaces sold far ahead, buyers seem to feel that it is good policy to wait, on the ground that after all prices probably will not go higher. Quotations on standard brands, largely nominal, are as follows for prompt shipment, delivery being made in buyers' yards:

Eastern Penna. No. 2 X foundry.....	\$53.00 to \$55.00
Eastern Penna. No. 2 plain.....	52.50 to 54.50
Virginia No. 2 X foundry.....	54.25 to 55.25
Virginia No. 2 plain.....	53.75 to 54.75
Basic.....	50.00 to 52.00
Standard low phosphorus.....	90.00

**Ferroalloys.**—Activity continues in ferromanganese, good sales being accompanied by stiffening prices. For the most part, sales are now being made on a basis of \$400 for the remainder of this year, with \$375 reported in transactions for the first quarter of 1918 and \$350 quoted for the second quarter. Spiegeleisen is likewise stronger, at \$82.50 to \$85, furnace. Reports indicating additional difficulty in the near future over obtaining Brazilian ore have added to the strength of the ferromanganese market. Quotations of \$165 on small lots of 50 per cent ferrosilicon for first half 1918 are heard, and a quotation of \$105, furnace, for prompt shipment was given on 11 per cent Bessemer ferrosilicon.

**Coke.**—Spot fuel was quoted to-day at \$15 to \$16, with \$15.50 apparently the ruling figure. The general fuel situation is reflected in the fact that to-day's quotations on ordinary bituminous coal were \$4.50 to \$5 per gross ton at the mine as against the price of \$3 per net ton and 25 cents commission, as proposed in the agreement the operators submitted to the Government some time ago, but which was rejected by Secretary Baker.

**Billets.**—Mills in this territory, for the most part, report no billets to offer and no transactions have been reported this week. In some instances, old customers are being scaled down in their allotments. However, influences which have been at work in other steel-making districts are being felt here, and one of the leading houses in this territory is offering small slabs and soft steel billets, 4 in. and up, at \$95, with moderate tonnages available. Forging billets are virtually off the local market, and the price of \$125 for 1918 delivery, as recorded in the last sale reported, still obtains as the nominal basis.

**Plates.**—Many small orders for civilian work were entered during the past week and more could be had by the mills if guarantee of reasonable delivery could be given. Mills are doing their best to look after the smaller consumers, so far as Government interests will permit. Export orders continue to appear, but receive scant attention. Locomotive builders and bridge shops are placing orders constantly, while shipyards are specifying heavily. The increase in specifications means longer delay in deliveries, particularly on domestic business. Prices are unchanged, the minimum being 10.159c., Philadelphia, for tank and 12.50c., mill, for ship steel.

**Structural Material.**—An inquiry for about 4500 tons of car shapes, of which no disposition has yet been made, constitutes the week's main feature in structural materials. Mills have virtually nothing but odd lots to sell, and prices on this "left-over" material are reported by one Eastern interest as 6.10c., f.o.b. mill. Prices as high as 10c. for fabricated material are reported on small jobs.

**Sheets.**—Additional inquiry on material for army stoves is reported, and the prospects for supplying domestic orders is dimmer, so far as mills in this territory are concerned. Such orders as can be filled are taken on the old basis of 8½c. for No. 10 blue annealed.

**Iron and Steel Bars.**—Soft steel bars are being held at 4½c. to 5c., Pittsburgh, by makers, the former price being cited by one mill which qualified the statement with the information that it had few, if any, to sell. One maker of bar iron gives 4½c., Pittsburgh, as the

price for carload lots, with 5c., Pittsburgh, asked for lesser quantities. Another considerable maker stands firmly on 5c., Pittsburgh, as the minimum and reports plentiful inquiry. The shipbuilding program, which is bringing a great deal of work to the Delaware River, is responsible for stimulating this branch of the trade, and it has likewise boomed the demand for ship spikes, inquiries usually stating that amounts sufficient for 10 wooden ships are desired.

**Old Material.**—Owing to the requirements of the Pennsylvania Railroad embargo on scrap shipments, whereby the purchaser must certify the transaction before cars will be accepted from the shipper, the movement of old material is falling back and some houses report that they are ten days behind. Dealers say that the extra work involved is so great that any revival of business will necessitate the establishment of traffic departments, or something very like them, in order to get shipments under way. There has been comparatively little trading during the last week, but in spite of the embargo a distinctly better tone is reported, largely on account of the improvement in Pittsburgh conditions. Quotations, largely nominal, per gross ton delivered in eastern Pennsylvania are:

No. 1 heavy melting steel.....	\$33.00 to \$34.00
Steel rails, rerolling.....	43.00 to 45.00
Low phosphorus heavy melting.....	40.00 to 43.00
Old iron rails.....	45.00 to 47.50
Old carwheels.....	34.00 to 35.00
No. 1 railroad wrought.....	45.00 to 50.00
No. 1 forge fire.....	22.00 to 23.00
Bundled sheets.....	22.00 to 23.00
No. 2 busheling.....	16.00 to 17.00
Machine shop turnings (for blast furnace use).....	19.00 to 20.00
Machine shop turnings (for rolling mill use).....	20.00 to 21.00
Cast borings (for blast furnace use).....	19.00 to 20.00
Cast borings (clean).....	22.00 to 23.00
No. 1 cast.....	33.00 to 34.00
Grate bars.....	20.00 to 21.00
Stove plate.....	21.00 to 22.00
Railroad malleable.....	32.50 to 35.00
Wrought iron and soft steel pipe (new specifications).....	29.00 to 31.00

## Cincinnati

CINCINNATI, Aug. 21, 1917. (By Wire.)

**Pig Iron.**—The slowing down in sale of spot shipment foundry iron characterizes the entry of the present week and as a continuation of a long drawn out dull period. Few new entries have been made in order books during the past few days, and the small amount of iron bought consists of Southern foundry that is urgently needed. The inquiry is exceedingly light, although a northern Ohio melter is asking for 3000 tons of mixed Northern and Southern grades for shipment through the last quarter of this year and into the first half of next year. Rumors that resale iron in the South is being offered below market prices have not yet been substantiated, but a number of consumers have iron due on contracts made at lower prices, and some of them are not averse to selling any surplus they may have for this year. First half prices are hard to obtain. The last furnace quotation issued was \$45, Birmingham, but \$44 has recently been offered by at least one holding interest for that delivery. Both buyers and sellers are waiting on Washington. The foundry iron melt has fallen some on account of the hot weather, but the consumption of steel making irons in this vicinity is above normal. Northern foundry is unchanged at \$55, Ironton, with few transactions reported of any nature. The Virginia irons have not been heard of lately, with the exception of a few rush cars that were sold to melters badly in need of the metal. Norton furnace, Ashland, was banked Monday on account of labor troubles. Based on freight rates of \$2.90 from Birmingham and \$1.26 from Ironton, we quote, f.o.b. Cincinnati, for 1917 shipment, as follows:

Southern coke, No. 1 f'dry and 1 soft.....	\$51.40 to \$52.40
Southern coke, No. 2 f'dry and 2 soft.....	49.90 to 50.90
Southern coke, No. 3 foundry.....	49.40 to 50.40
Southern coke, No. 4 foundry.....	48.90 to 49.90
Southern gray forge.....	48.90 to 49.90
Ohio silvery, 8 per cent silicon.....	87.26 to 91.26
Southern Ohio coke, No. 1.....	56.26 to 57.26
Southern Ohio coke, No. 2.....	56.26 to 57.26
Southern Ohio coke, No. 3.....	55.26 to 56.26
Southern Ohio malleable Bessemer.....	56.26 to 57.26
Basic, Northern.....	56.26 to 57.26
Lake Superior charcoal.....	56.75 to 57.75
Southern carwheel foundry.....	48.90 to 49.90

**Coke.**—The difficulties at the ovens are increasing. Labor is still causing trouble on account of its scarcity and unreliability. A recent visit made by a dealer to one of the large producing fields discloses no relief in sight in that section. The hot weather again prevailing is calculated to still further disturb conditions. The car supply improves one day and slips back the next, so that shippers are nearly always uncertain as to being able to keep promises on shipments to their customers. Spot foundry coke prices are so far apart that it is almost useless to quote them. For instance, last week some 72-hr. coke was sold in the Connells-ville district as low as \$14 per net ton at oven, to be followed by other sales the same week at \$16. Pocahontas, Wise County and New River prompt prices are on the same level, but there has been no change in contract quotations that range from \$11 to \$12.50 for foundry coke in all the different districts named. The absence of any transactions in furnace coke renders it difficult to quote, but the nominal contract prices are from \$9 to \$10 per net ton at oven.

**Finished Material.**—The jobbers report a recent very heavy demand for twisted reinforcing concrete rods. Some of this business is from bridge builders, but most of it is from contractors who are putting up manufacturing buildings. Dayton, Ohio, builders have lately bought heavily from warehouse stocks, owing to their inability to get more prompt shipments from the mills. The store price on both iron and steel bars is 5c. and on twisted steel bars 5.05c. Plates ¼-in. and heavier are firm at 10c. base and No. 10 blue annealed sheets 10c. Cold rolled shafting from jobbers' stocks is quoted at 15 per cent plus list. One Pittsburgh mill is quoting 5 per cent off the list Pittsburgh, but has only odd sizes to offer for nearby shipment. Machine bolts ¾ x 4-in., and smaller are unchanged at 40 per cent discount; larger and longer, 30 per cent discount. No. 28 black sheets are quoted nominally at 9.65c. Cincinnati or Newport, Ky., and No. 28 galvanized around 11.65c. Wire nails are sold by the jobbers at \$3.90 per keg base, but business is light and confined to less than carload lots. Barb wire remains at 5c. a lb.

**Old Material.**—An unexpected advance occurred on nearly all grades of scrap material. Steel scrap probably responded more quickly to the increased demand than any other kind. Mills in the Pittsburgh district especially are reaching out quietly for a future supply, but little or no buying is reported for next year's shipment. Orders now placed are mostly for delivery this year. The present situation refutes the statement made several weeks ago that the steel mills had covered for their entire requirements this year. The following are dealers' prices f.o.b. at yards Cincinnati, and Southern Ohio:

*Per Gross Ton*

Bundled sheet scrap.....	\$20.00 to \$20.50
Old iron rails.....	34.00 to 34.50
Relaying rails, 50 lb. and up.....	45.50 to 46.00
Rerolling steel rails.....	37.00 to 37.50
Heavy melting steel scrap.....	33.00 to 33.50
Steel rails for melting.....	33.00 to 33.50
Old carwheels.....	30.00 to 30.50

*Per Net Ton*

No. 1 railroad wrought.....	\$32.00 to \$32.50
Cast borings.....	13.00 to 13.50
Steel turnings.....	13.00 to 13.50
Railroad cast.....	23.00 to 23.50
No. 1 machinery cast.....	25.00 to 25.50
Burnt scrap.....	14.50 to 15.00
Iron axles.....	44.00 to 44.50
Locomotive tires (smooth inside).....	37.00 to 37.50
Pipes and flues.....	18.00 to 18.50
Malleable cast.....	25.00 to 25.50
Railroad tank and sheet.....	16.00 to 16.50

## Birmingham

BIRMINGHAM, ALA., Aug. 20—(By Mail).

**Pig Iron.**—There is a steady run of small orders in the case of the only two iron makers who appear interested in sales, but the average is small. The price deadlock continues, resale iron left over at ports being small in quantity and not affecting the general run. Spot sales during the week have been at \$50 and \$52. Two furnace interests reports 1917 sales at \$50 and 1918 sales at \$48. There are furnace interests which would sell at \$45 if there was any manner of compe-

tition, but there is none. Several interests have not scratched order books in ten days to two weeks. Furnace operators have found difficulty in delivering higher grades of iron as specified, because wet weather has produced more low grades than usual. Alabama yard stocks went down 45,000 tons in July. Freight movements were unusually good, the report of the Alabama Demurrage Association for July showing movements of 91,520 cars, an increase over July, 1916, of over 24,000 cars. Buyers who have sought advice of operators as to advisability of purchasing at present prices have been advised to hold off until Washington does something definite. Makers are not anxious to assume responsibility as to the future. Government contracts for shells and other iron and steel shapes have been received in quantities by Birmingham foundries. We quote per gross ton, f.o.b. Birmingham furnaces, for prompt delivery as follows:

No. 1 foundry and soft.....	\$50.50 to \$51.50
No. 2 foundry and soft.....	50.00 to 51.00
No. 3 foundry.....	49.50 to 50.50
No. 4 foundry.....	49.25 to 50.25
Gray forge.....	49.00 to 50.00
Basic.....	50.00 to 51.00
Charcoal.....	55.00 to 56.00

**Cast-Iron Pipe.**—There has been very little new pipe business since the reception of one or two sizeable Western orders and more Government specifications. The latter are taken at \$5 under the regular price and specify rush delivery. We quote per net ton, f.o.b. pipe shop yards, as follows: 4 in., \$63; 6 in. and upward, \$60, with \$1 added for gas pipe and special lengths.

**Coal and Coke.**—Coal production suffered some during the week owing to unrest incident to the threatened walkout scheduled for the 20th but called off Saturday pending effort of Secretary Wilson to adjust differences. Prices remain firm around the basis fixed by the Government. Coke is firm at a minimum of \$12.50 on contracts and \$14 for spot. As high as \$17 has been paid for rush beehive foundry coke. Delivery in the southwest is reported as good.

**Old Material.**—The scrap market shows further recessions. The yards have large quantities, but consumers seem well-provided for, thus producing stagnant conditions. All schedules are down \$1 to \$2 per ton. We quote per gross ton, f.o.b. dealers' yards, as follows:

Old steel axles.....	\$50.00 to \$51.00
Old steel rails.....	24.50 to 25.00
No. 1 wrought.....	26.00 to 27.00
No. 1 heavy melting steel.....	17.00 to 18.00
No. 1 machinery cast.....	22.00 to 22.50
Carwheels.....	22.50 to 23.00
Tram carwheels.....	21.00 to 22.00
Stove plate and light.....	15.50 to 16.00
Turnings.....	11.00 to 12.00

**Iron and Steel Bars.**—Steel bars in car lots, f.o.b. Birmingham, 4.75c. to 5.00c.; iron bars, 4.40c. to 4.60c.

## British Steel Market

LONDON, Aug. 21—(By Cable).

The pig iron market in the Cleveland district is more quiet. Hematite is strong. Semi-finished material is dull. Iron rods are unchanged. Tin plates are slow but firm. Ferromanganese sold at £80 f.o.b. for September and October. We quote as follows:

Tin plates, coke 14 x 20; 112 sheets, 108 lb., f.o.b. Wales, maximum, 30s.  
Black sheets, £21 5s.  
Ferromanganese, £45 nominal.  
Ferrosilicon, 50 per cent, c.i.f., £35 upward.  
On other products control prices are as quoted in THE IRON AGE, of July 19, p. 171.

## New York

NEW YORK, Aug. 22.

The principal activity in the pig iron market is for export. Inquiries amounting to about 25,000 tons for Bessemer and low phosphorus for export to a foreign country are pending and Italy is in the market for 500 tons per month of basic for 12 months, beginning with January. Owing to the limited amount of pig iron available and high freight rates, there is much uncertainty as to whether this iron can



be furnished for export. Recent sales for foreign shipment are 500 tons for Japan and the same amount for Italy, both low in phosphorus, sulphur and silicon. No large inquiries from domestic millers are pending. One for 600 tons of foundry iron for delivery through the remainder of this year has been withdrawn, and one for 400 tons for Western shipment is pending. A sale of 200 tons of Virginia iron has been made for delivery in New Jersey. In spite of the dullness, prices are being firmly adhered to. Embargoes continue throughout New England and shipments are made only for Government work and many foundries are badly in need of iron. We quote for tidewater deliveries in the near future as follows:

No. 1 foundry .....	\$53.25 to \$54.25
No. 2 X .....	52.75 to 53.75
No. 2 plain .....	52.50 to 53.50
Southern No. 1 foundry .....	52.75 to 53.75
Southern No. 2 foundry and soft .....	52.25 to 53.25

**Structural Material.**—Government business continues to monopolize attention, and export inquiry is, on the whole, of diminished volume, with general building operations a negligible factor. For export on 1200 tons of 3-in. and larger angles for the Far East for shipment in September, 5c., Pittsburgh, was offered to one mill. In this connection, an interesting development may be noted in a mill charge on 500 tons for India of 1c. per pound to cover inspection, the steel having been sold at 6c. For buildings for the Government projectile plant at Charleston, W. Va., 500 to 750 tons will be required, covering three general buildings and six magazine storehouses. Perhaps 500 tons is involved in a general storehouse for the naval operating base at Hampton Roads. Government buildings are also to be built as follows: Two each at Hingham, Mass.; Lake Denmark, near Dover, N. J., and at Fort Mifflin, on St. Julians Creek, Va. For the Charleston plant, the American Bridge Co. is fabricating three 6-ton Heroult furnaces. Additional railroad bridge work has appeared, including 100 tons for the Boston & Albany, 125 tons for the Baltimore & Ohio and 100 tons for the New York Central, the last placed with the American Bridge Co. Of other structures on which bids will soon be taken, mention may be made of a Y. M. C. A. building, Rahway, N. J.; the Cumberland Street Hospital, Brooklyn; a Long Island City post-office; Knickerbocker Hospital, New York; a power house for the General Hospital, Philadelphia, and 300 tons for the New York Belting & Packing Co., Passaic. Owing to the increase in freight rates from Pittsburgh of approximately 15 per cent, quotations are now as follows: Mill shipments, 4.695c. to 5.195c., New York, largely according to the urgency of shipment; while from warehouse, shipments are made at 5c. and 5.25c. per pound, New York, according to sizes desired.

**Steel Plates.**—Practically no business has been done and chief interest centers on what will be done with existing Japanese contracts, owing to the Government embargo. From Japanese buyers, inquiry on various forms of finished steel have been numerous, but they seem more to be attempts to test market prices than to indicate a belief in an early lifting of the embargo. In some of the unfilled contracts, it appears that mills may, in the event of embargoes, exact payment if material can be loaded on cars, though it is not clear that, should cars be available, the Government's restriction on limiting the rolling date to Aug. 10, would not supersede. All told, 9000 cars of standard gage have now been bought for the Government's railroad in France, with the likelihood that the 5000 cars remaining of the ultimate total of 17,000 will shortly be distributed among the car builders not yet participating. The additional 3000 cars were distributed among the six companies awarded the first 6000 cars. Of plate inquiries, 2000 tons are noted from Japan and 2000 tons from the French Commission. Allowing for the increased freight rates, effective Aug. 20, we quote tank plates from mill at 10.195c., New York, and ship plates at 12.169c., New York, both for domestic and foreign consumption, the freight rates being the same for export as for seaboard shipment. Out of stores, we quote plates at 8c. to 11c.

**Iron and Steel Bars.**—No transactions of importance have occurred, but a recent sale of 800 tons of small

rounds is noted at 4.60c. at mill. Consumers are pretty well covered for this year and jobbers are not notably concerned over fourth-quarter supplies, the industry playing a waiting game, expecting lower prices, predicated on hopes of regulation from Washington and on a belief in a considerable increase in steel rolling capacity. This view seems to be contradicted so far as all forms of finished steel are concerned in view of the general practice of the mills for weeks not to consider new business offered. Reductions in the amount of tonnage booked from week to week could, it is explained, have been prevented if mills chose to maintain bookings months in advance of rollings. Allowing for the increased freight charges, effective Aug. 20., we quote steel bars from mill at 4.695c. to 5.695c., New York, and mill shipments of bar iron at 4.945c. to 5.195c., New York. From New York district warehouses, steel and iron bars are sold at 5c. to 5.50c.

**Ferroalloys.**—It has been a comparatively light week in ferromanganese after the considerable sales reported one week ago. It is now indicated that roundly 3000 tons of ferromanganese is in process of shipment from British furnaces, a considerable part of it being afloat. The tendency of prices is upward, and whereas the sales referred to above were made at \$350 for the first half of 1918 and at \$375 for this year, some makers are now asking \$350 for the second quarter of 1918, \$375 for first quarter and \$400 for this year. For spiegeleisen, 18 to 22 per cent, \$85 is generally the market. In ferrosilicon there is an advancing tendency, and whereas \$130 was the basis some time ago of contracts for the first half of 1918 as high as \$165 is now asked on such delivery. On spot transactions, carload lots, \$200 is commonly asked.

**Cast Iron Pipe.**—Cast iron pipe shops have received word that the Government has decided to establish another cantonment at Tenaflly, N. J., and will need some pipe, though the tonnage has not been stated. Very little new business is pending. Carloads of 6-in., 8-in. and heavier are quoted at \$65.50 per net ton tidewater and 4-in. at \$68.60.

**Old Material.**—It has developed that the recent declaring of embargoes by the Pennsylvania and other railroads is a part of a carefully devised scheme of the Government to regulate car supply and prevent speculative dealing. It is impossible to ship to very many points without obtaining permits, which are not granted unless assurances are given that the material can be delivered and will be accepted without delay. There has been a fair movement of scrap under the permit plan and slightly more activity has developed in the market. Some dealers are looking forward confidently to improved conditions within the next two or three weeks. Brokers quote buying prices as follows to New York producers and dealers per gross ton, New York:

Heavy melting steel scrap (for shipment to eastern Pennsylvania) .....	\$29.50 to \$30.50
Old steel rails (short lengths) or equivalent heavy steel scrap .....	29.50 to 30.50
Relaying rails .....	65.00 to 70.00
Rerolling rails .....	39.00 to 40.00
Iron and steel car axles .....	42.00 to 43.00
No. 1 railroad wrought .....	41.00 to 42.00
Wrought-iron track scrap .....	32.00 to 33.00
No. 1 yard wrought long .....	32.00 to 33.00
Light iron .....	10.00 to 12.00
Cast borings (clean) .....	21.00 to 21.50
Machine-shop turnings .....	18.00 to 19.00
Mixed borings and turnings .....	16.50 to 17.00
Wrought-iron pipe (1 in. minimum diameter, not under 2 ft. long) .....	30.00 to 31.00

For cast-iron scrap, dealers in New York City and Brooklyn are quoting as follows to local foundries per gross ton:

No. 1 machinery cast .....	\$34.00 to \$35.00
No. 1 heavy cast (column, building material, etc.) .....	29.00 to 30.00
No. 2 cast (radiators, cast boilers, etc.) .....	28.00 to 29.00
Stove plate .....	20.00 to 21.00
Locomotive grate bars .....	20.00 to 21.00
Old carwheels .....	33.00 to 34.00
Malleable cast (railroad) .....	32.00 to 33.00

The Seaboard By-Products Co. has completed its plant of 110 ovens at Newark, N. J., and is making 1400 tons of coke per day. The Debevoise-Anderson Co., New York, is the sales agent.

## Cleveland

CLEVELAND, Aug. 21.

**Iron Ore.**—The action of the Government in taking control of the distribution of coal and ordering railroads to give preference to shipments of coal to Great Lake ports over other commodities in order to prevent a shortage in the northwestern markets is expected to considerably improve the iron ore situation, as coal cars now used in other traffic or in hauling fuel to Eastern points will be diverted to carrying coal to Lake Erie ports. As a result, there will be a better supply of cars for hauling ore to the interior furnaces than there has been for many weeks. The movement of ore has been seriously delayed all the season by the scarcity of cars which has kept boats at Lake Erie docks several days waiting for cars to haul their cargoes. However, with the expected improvement in the car supply railroads reaching Lake Erie docks will be unable to handle all the Lake Superior ore sold for this season's delivery, and on this account the tonnage that will be brought down will be distributed pro rata among the various inland furnaces. A decision to that effect was taken late last week at a meeting in Cleveland of the subcommittee of the ore and pig iron transportation committee of the Council of National Defense, of which H. G. Dalton is chairman. Letters will be sent to ore consumers asking them to cut down their requirements for this year to actual needs and assuring them that, if this is done, every effort will be made to distribute the ore received equitably. It is expected that some of the consumers will be able to cut down the minimum requirements they specified when called upon a number of weeks ago to report the amount of ore they would need to last them until the opening of next season of navigation. We quote prices as follows, delivered lower Lake ports: Old range Bessemer, \$5.95; Mesaba Bessemer, \$5.70; old range non-Bessemer, \$5.20; Mesaba non-Bessemer, \$5.05.

**Pig Iron.**—The market, which has been lifeless for several weeks, has taken on some activity. Several inquiries have come out for foundry and malleable iron for the last half of this year and the first half of next year, mostly for small lots, although one consumer is inquiring for 3000 tons. Several small lot sales of foundry grades are reported at \$55 by Lake furnaces for No. 2, but a number of inquiries have so far not resulted in the placing of orders, consumers apparently being undecided whether to buy now or to wait until prices are fixed by the Government. While \$55 is the ruling quotation for foundry iron by Lake furnaces, this iron is being quoted at \$53 for No. 2 by a Valley furnace. The dullness of the market is indicated by the sales of one leading selling agency, which so far this month have aggregated about 8000 tons. We note the sale of a small tonnage of Virginia iron at \$54.70, delivered, for early shipment. We quote, f.o.b. Cleveland, as follows:

Bessemer .....	\$53.95
Basic .....	\$52.30 to 52.95
Northern No. 2 foundry .....	55.30
Southern No. 2 foundry .....	54.00
Gray forge .....	50.95 to 52.95
Ohio silvery, 8 per cent silicon .....	88.62
Standard low phos. Valley furnace .....	85.00

**Coke.**—There is practically no demand for either furnace or foundry coke. Foundries are getting shipments on contracts as needed and there is very little inquiry for prompt shipment fuel. Standard grades of Connellsville foundry coke are quoted from \$14 to \$14.50 per net ton at oven for prompt shipment.

**Finished Iron and Steel.**—There is very little new inquiry for finished steel. Consumers generally are buying only to meet their immediate requirements owing to the unsettled price situation, which doubtless will not be cleared up until the Government fixes prices it is to pay for steel. This condition has affected the plate market in particular, the demand for plates having fallen off materially. Local mills continue to quote plates at 10c., Pittsburgh, but some fourth quarter business has been placed with other mills at 8c. The embargo on exports has not entirely cut off the foreign

demand, some small lot sales for export being made during the week, the buyers apparently taking their chances on securing delivery. The semi-finished steel market is inactive, although a sale of odds and ends for billets is reported by a Cleveland mill at \$85. Sales of the same class of material representing various analyses were made recently at \$95.

**Bolts, Nuts and Rivets.**—Bolt and nut specifications are heavy, being largely for Government work. There is not much new inquiry, although there is an improvement in the demand from the automobile field. Rivet makers are getting a heavy volume of specifications but little new business is coming out. Buyers are apparently holding off in view of the possible Government regulation in prices. Prices are firm at 5.25c., Pittsburgh, for structural and 5.35c. for boiler rivets for this year's delivery. Bolt nut discounts are as follows, round lot buyers being allowed from 5 to 10 per cent discount from these prices:

Common carriage bolts,  $\frac{3}{4}$  x 6 in., smaller or shorter, rolled thread, 35 off; cut thread, 30 and 5, larger or longer, 20. Machine bolts, with h. p. nuts,  $\frac{3}{4}$  x 4 in., smaller or shorter, rolled thread, 40; cut thread, 35; larger and longer, 25. Lag bolts, cone point, 40. Square h. p. nuts, blank, \$1.90 off list; tapped, \$1.70 off list. Hexagon, h. p. nuts, blank, \$1.70 off; tapped, \$1.50 off. C. p. c. and t. hexagon nuts, all sizes blank, \$1.25 off; tapped, \$1 off. Cold pressed semi-finished hexagon nuts, 50 and 5 off.

**Old Material.**—The market continued dull, the only demand being from dealers who have not covered on short sales. Not much scrap is being offered at present, as many producers and dealers are holding it for higher prices and yard stocks are well cleaned out. Dealers who are in the market are offering somewhat higher prices for heavy melting steel than recent quotations, sales of this grade being made as high as \$34. Busheling is firmer. While a small lot has sold at \$25, one dealer is offering \$27 for this grade. Cast scrap is weaker and has sold at \$27. The embargo of the Pennsylvania Railroad on scrap shipments to Pittsburgh and all other points east of Cleveland is still in force, but is expected to be lifted this week. We quote f.o.b. Cleveland as follows:

Per Gross Ton	
Steel rails .....	\$30.50 to \$31.50
Steel rails, rerolling .....	44.50 to 45.50
Steel rails, under 3 ft. ....	36.50 to 37.50
Iron rails .....	42.50 to 43.50
Steel car axles .....	26.00 to 26.50
Heavy melting steel .....	31.00 to 33.00
Carwheels .....	30.50 to 31.50
Relaying rails, 50 lb. and over .....	49.50 to 54.50
Agricultural malleable .....	23.50 to 24.50
Railroad malleable .....	30.50 to 31.50
Light bundled sheet scrap .....	23.50 to 24.50
Per Net Ton	
Iron car axles .....	\$46.50 to \$47.00
Cast borings .....	17.50 to 18.00
Iron and steel turnings and drillings ..	17.00 to 17.50
No. 1 busheling .....	26.00 to 27.00
No. 1 railroad wrought .....	40.50 to 41.50
No. 1 cast .....	27.00 to 28.00
Railroad grate bars .....	21.00 to 22.00
Stove plate .....	20.50 to 21.50

The Linde Air Products Co. will start its new plant at Youngstown, Ohio, within a short time for the manufacture of oxygen. The company has similar plants in about 30 industrial centers in the United States, and heretofore has shipped oxygen to steel fabricators and others in the Youngstown district from other factories, but the starting of the new plant will allow it to supply oxygen direct. The new plant is said to be modern in every detail, and will be operated electrically throughout. The company has made an arrangement with the Mahoning & Shenango Railway & Light Co. for current.

The National Castings Co., Inc., Marietta, Pa., which recently started its new foundry, is now making gray iron and semi-steel castings in all weights up to 20,000 lb. Its plant is located between Harrisburg and Philadelphia, and the company is receiving orders for castings from a number of the larger Eastern cities. The company states it has all its equipment purchased and installed. It has its own railroad siding, and is in position to make prompt shipments.



## IRON AND INDUSTRIAL STOCKS

### Pope's Peace Proposal Has No Effect—Discussing New Liberty Loan

Previous peace moves aroused keen interest on the stock market, but the effort of the Pope to bring about a reign of peace was apparently without effect last week, when the changes were rather uninteresting and it was difficult to trace their cause. A number of railroad stocks declined sharply and some steel shares also lost ground, while others were well maintained. Discussion in regard to the next Liberty loan has been started in Wall Street, which promises to respond again in helping the Government to raise a few billion dollars more.

Among the industrial stocks that registered gains during the past week were the following: International Harvester,  $2\frac{1}{2}$ ; Midvale Steel,  $\frac{3}{8}$ ; Republic Iron & Steel,  $\frac{1}{2}$ ; United States Steel,  $\frac{3}{8}$ . Among the stocks that made losses during the week were the following: American Can,  $\frac{5}{8}$ ; American Car & Foundry,  $\frac{1}{2}$ ; American Locomotive,  $\frac{3}{4}$ ; Baldwin Locomotive, 1; Bethlehem Steel,  $4\frac{1}{2}$ ; Bethlehem Steel, Class B,  $2\frac{1}{2}$ ; Crucible Steel,  $2\frac{1}{2}$ ; Gulf States Steel, 7; Lackawanna Steel,  $1\frac{3}{4}$ ; National Enameling & Stamping,  $\frac{1}{2}$ ; Pressed Steel Car,  $\frac{1}{4}$ ; United States Steel, preferred,  $\frac{1}{2}$ . Allis-Chalmers, American Steel Foundries and Colorado Fuel & Iron remained the same at the end of the week as at the beginning, being 29 $\frac{1}{4}$ , 72 and 49 $\frac{1}{4}$ , respectively.

The range of prices on active iron and steel stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chal., com., 28 - 29 $\frac{1}{4}$	Int. Har. of N. J., com., 114 $\frac{3}{4}$ - 118 $\frac{3}{4}$
Allis-Chal., pref., 85 - 85 $\frac{7}{8}$	Int. Har. of N. J., pref., 117 $\frac{1}{2}$
Am. Can., com., 45 $\frac{1}{2}$ - 46 $\frac{1}{2}$	Int. Har. Corp., com., 79
Am. Car & Fdry., com., 73 $\frac{1}{2}$ - 75 $\frac{1}{4}$	Int. Har. Corp., pref., 105
Am. Car & Fdry., pref., 116 - 117	Lackawanna Stl., 88 $\frac{1}{4}$ - 91 $\frac{1}{2}$
Am. Loco., com., 68 - 70 $\frac{1}{2}$	Lake Sup. Corp., 16 $\frac{1}{4}$ - 16 $\frac{1}{2}$
Am. Loco., pref., 104 - 105 $\frac{1}{2}$	Lima Loco., 56 - 57 $\frac{1}{2}$
Am. Rad., com., 300 - 302	Midvale Stl., 57 - 58
Am. Ship., com., 93 - 94	Nat. En. & Stm., com., 41 $\frac{1}{2}$ - 42 $\frac{3}{4}$
Am. Ship., pref., 94 $\frac{1}{2}$ - 94 $\frac{1}{2}$	N. Y. Air Brake, 131 - 133
Am. Steel Fdries., 69 - 70 $\frac{1}{2}$	Nova Scotia Stl., 100 $\frac{1}{2}$ - 106
Bald. Loco., com., 68 - 71 $\frac{3}{8}$	Pressed Stl., com., 69 - 71 $\frac{1}{4}$
Bald. Loco., pref., 100 - 100 $\frac{1}{2}$	Ry. Steel Spring, com., 51 - 51 $\frac{1}{2}$
Beth. Steel, com., 114 - 118 $\frac{1}{2}$	Ry. Steel Spring, pref., 98 - 98 $\frac{1}{4}$
Beth. Steel, class B, 107 $\frac{1}{2}$ - 115 $\frac{1}{2}$	Republic, com., 88 $\frac{1}{4}$ - 90 $\frac{1}{2}$
Beth. Steel, pref., 115 $\frac{1}{4}$ - 115 $\frac{1}{2}$	Republic, pref., 103 $\frac{3}{4}$
Cambria Steel., 155	Sloss, com., 53 $\frac{1}{4}$ - 53 $\frac{3}{4}$
Carbon Stl., com., 92 - 99	Superior Steel., 44 - 45 $\frac{1}{2}$
Case (J. I.), pref., 84	Transue-Williams, 41 $\frac{1}{2}$ - 42
Cent. Fdry., com., 32 $\frac{3}{4}$ - 34 $\frac{1}{4}$	Un. Alloy Steel., 42 $\frac{1}{2}$ - 43 $\frac{3}{4}$
Cent. Fdry., pref., 49 $\frac{1}{2}$ - 53	U. S. Pipe, com., 20 $\frac{1}{2}$ - 20 $\frac{3}{4}$
Chic. Pneu. Tool., 67 $\frac{1}{2}$ - 68 $\frac{1}{2}$	U. S. Steel, com., 122 $\frac{3}{4}$ - 125 $\frac{1}{2}$
Colo. Fuel., 47 $\frac{3}{4}$ - 49 $\frac{1}{4}$	U. S. Steel, pref., 117 $\frac{3}{8}$ - 118
Cruc. Steel, com., 78 $\frac{1}{4}$ - 81 $\frac{3}{4}$	Warwick, 9 - 9 $\frac{1}{4}$
Cruc. Steel, pref., 100 $\frac{1}{2}$	Westing. Elec., 47 $\frac{5}{8}$ - 48 $\frac{3}{4}$
Deere & Co., pref., 99 $\frac{1}{4}$ - 100 $\frac{3}{4}$	
Gen. Electric., 151 - 153	
Gt. No. Ore. Cert. 34 - 36 $\frac{3}{4}$	
Gulf States Steel, 109 $\frac{1}{4}$ - 113	
Gulf States Steel, 1st pref., 108	

### American Shipbuilding Report

The report of the American Shipbuilding Co. for the fiscal year ended June 30, 1917, shows earnings of all properties after deducting manufacturing expenses, amounted to \$4,866,011. The net profit for the fiscal year was \$3,148,040 and from this is to be deducted \$400,000 for excess profits taxes for the past six months.

### Industrial Finances

The Eastern Motors, Inc., New Britain, Conn., is in financial trouble and attachments on the plant have been placed by creditors. It is reported that but one car has ever been built and that the company heads cannot be located. The company was incorporated last November with authorized capital stock of \$1,000,000 and later took over the former State Trade School building, New Britain, as an assembling plant.

The Mechanical Refrigerator Co. of Youngstown, Ohio, of which Gustave Doeright, president of the Vulcan Bronze Co.; George Rudge, Jr., formerly president of the Enterprise Boiler Co., and J. T. Harrington, a corporation lawyer, are the promoters, has de-

cided to issue \$100,000 in preferred stock and \$200,000 in common stock, to erect a plant and supply working capital.

The capital stock of the Engel Aircraft Co. of Cleveland, which recently took over the plant of the Niles Car & Mfg. Co. at Niles, Ohio, is to be increased from \$10,000 to \$3,000,000. The company will go into the manufacture of airplanes for the United States Government. It is said part of the aircraft will be made at the Niles plant, but it will be used chiefly as an assembling center. The motors and planes will be shipped to this plant and completed there. The product will be tested on a nearby site. Of the new capital stock, there will be 20,000 shares of common and 10,000 of preferred each of a par value of \$100. The preferred stock will be 7 per cent.

The Dayton-Wright Airplane Co., Dayton, Ohio, has been authorized to increase its capital from \$500,000 to \$1,000,000. There will be 6000 shares of common stock issued at \$100 and 4000 shares of preferred, the latter to pay 7 per cent. The company amended its articles of incorporation to permit it to deal in both airplanes and hydroplanes. H. E. Talcott, Jr., of Dayton is president, and A. C. Craighead secretary.

The Benoist Aeroplane Co., Canton, Ohio, has been incorporated with a capital of \$500,000.

In connection with the dividend of 1 $\frac{1}{4}$  per cent on the preferred stock, declared last week by the Crucible Steel Co. of America, Pittsburgh, Chairman DuPuy states that in order to conserve the company's working capital, and to meet the heavy costs of the improvements required to meet Government demands, and with the restrictions made by the Government surrounding the company's output, declaration of a dividend on its common stock was not considered at the meeting of the Board of Directors.

The capital stock of the Standard Sanitary Mfg. Co. has been increased from \$10,000,000 to \$20,000,000. Of the increase \$6,000,000 is common stock and \$4,000,000 preferred. The company is incorporated under the laws of New Jersey, and manufactures plumbing requisites.

The directors of the Cambria Steel Co. have declared an extra dividend of 1 $\frac{1}{2}$  per cent on the \$45,000,000 capital stock in addition to the regular quarterly disbursement of 1 $\frac{1}{2}$  per cent. This is the same amount as was paid extra in the preceding quarter.

An announcement was made last week of an offering of \$1,000,000 7 per cent cumulative preferred stock of the Buda Co., a concern engaged in the manufacture of railway supplies and internal combustion engines. The issue is being sold at 96, to yield about 7.30 per cent. The purpose of the new stock issue is to take care of the company's expanding business.

### Dividends

The Crucible Steel Co. of America, quarterly of 1 $\frac{1}{4}$  per cent on the preferred stock, payable Sept. 29. This dividend was declared out of, and will be charged to, surplus earned prior to Mar. 1, 1913. No action was taken on an expected dividend on the common stock.

The Cambria Steel Co., 1 $\frac{1}{2}$  per cent quarterly, and also an extra of the same amount, both payable Sept. 15.

The Carpenter Steel Co., Reading, Pa., is planning for the construction of additions to its works. The company has recently acquired a large tract of property on the Schuylkill River, opposite its plant. Plans have been completed for the construction of a reinforced concrete bridge across the river with double-track driveway and footpath to connect the properties.

The Bethlehem Steel Co., Bethlehem, Pa., commenced the operation of a new 200-ton open-hearth steel-tilting furnace at its local works Aug. 17. The new furnace will increase the output of the works from 50,000 to 60,000 tons a month. It has been in course of construction for a year.

The new No. 3 furnace at the Worth plant of the Midvale Steel & Ordnance Co. at Coatesville, Pa., was blown in this week.

## Metal Markets

### The Week's Prices

Cents Per Pound for Early Delivery							
Copper, New York		Tin		Lead		Spelter	
		Electro-lytic	New York	New York	St. Louis	New York	St. Louis
Aug.	Lake						
15	27.50	27.50	62.50	10.75	10.62½	8.75	8.50
16	27.00	27.00	62.50	10.67½	10.50	8.75	8.50
17	27.00	27.00	62.50	10.67½	10.50	8.75	8.50
18	27.00	27.00	62.50	10.67½	10.50	8.75	8.50
19	26.50	26.50	62.00	10.67½	10.50	8.75	8.50
20	26.50	26.50	61.75	10.67½	10.50	8.75	8.50

### New York

NEW YORK, Aug. 22.

Prices of copper, tin and lead are lower than a week ago, but business has not been stimulated thereby, and it is certain that all of the metal markets will remain in a dull and stagnant condition until the Government price-fixing decision has been announced. Copper is nominal at 26.50c., New York. Some business in tin futures has been done. Yesterday's price was 61.75c., New York. Lead is dull. A little business has been done for export at 10.75c., St. Louis, and at 10.50c. in bond. Yesterday quotation was 10.67½c., New York, and 10.50c., St. Louis.

**Copper.**—Many have believed that the President could not and would not fix arbitrary prices for copper and other non-ferrous metals. Now that he has established a precedent by announcing fixed prices for coal, however, it is realized that he not only can but must fix prices for steel, copper and other similar products for Government purchases. The trade seems reconciled to the idea that such a drastic policy must soon come. Buyers and sellers are now doing nothing but waiting until uncertainty as to the Government prices has been removed. In reflection of this waiting attitude the market has become slightly weaker, and our quotation shows a decline of 1c. since a week ago. However, this price is largely nominal, as not a pound of copper is changing hands except for actual nearby requirements. We quote Lake and electrolytic at 26.50c., New York, for August and 25c. for last quarter delivery. London cables of Aug. 20 show no change there from a week ago, spot electrolytic being quoted at £137 and £133 for futures.

**Tin.**—On Aug. 15 there were reports in the trade of sales for all positions aggregating about 200 tons. On Aug. 16 the market was nominal, with practically no business done. There were some cheap offerings of tin about to be shipped from England, but these were not taken up. On Aug. 17 there developed considerable interest by consumers in shipments from the Straits Settlements late this year, but on account of delays in cables nothing was done. Since Aug. 17 the market has been stagnant, although on Saturday, Aug. 18, a slight interest in futures developed and some business was transacted. On Monday, Aug. 20, there were also light sales for future. Delays in the receipt of cables from abroad are greatly hindering transactions. Prevailing prices for Straits tin during the past week were about 62.50c. until yesterday, when this quotation was marked down to 61.75c. Arrivals from Aug. 1 to 20 totaled 2470 tons and the quantity afloat from the Straits and United Kingdom was 4215 tons.

**Lead.**—This market continues to be extremely dull, with domestic business and demand practically nil. A small tonnage for export changed hands a few days ago at 10.75c., New York, but most handlers ask 11c., delivered at Eastern points. Other lots were offered at 10.50c., St. Louis. A good-sized lot was sold at 10.50c., New York, in bond last week. More lead was offered during the week than was wanted, and as a result prices slightly weakened. We quote 10.67½c., New York, and 10.50c., St. Louis, the spread between New York and St. Louis prices now representing only the actual freight difference. Little is known about the policy that the Government may pursue with regard to lead prices, except that lots which have been purchased to meet the Government requirements of approximately 8000 tons

a month have been sold at 8c. It is understood that there has been little criticism of this price among producers, and that it offers a fair profit.

**Spelter.**—There are not enough transactions in spelter to make a market, but the few lots that change hands for current needs fetch 8.50c., St. Louis, which was our quotation a week ago. However, there were indications of a slight weakening on the part of some small handlers, who, either becoming tired of holding onto their stocks so long or else being anxious to stimulate activity, made offerings for nearby at about 8.37½c., St. Louis.

**Antimony.**—Antimony remains exceedingly dull. There virtually is no market. We quote Japanese and Chinese grades without change at 15c. to 15.50c., New York, duty paid.

**Aluminum.**—The market is dull and No. 1 virgin metal, 98 to 99 per cent pure, is nominal at 50c., New York.

**Old Metals.**—Dealers' selling prices are unchanged as follows:

	Cents per lb.
Copper, heavy and crucible.....	27.00 to 28.00
Copper, heavy and wire.....	26.00 to 27.00
Copper, light and bottoms.....	24.00 to 24.50
Brass, heavy.....	18.50 to 19.50
Brass, light.....	14.00 to 14.75
Heavy machine composition.....	24.75 to 25.25
No. 1 yellow rod brass turnings.....	17.50
No. 1 red brass or composition turnings.....	19.00 to 21.00
Lead, heavy.....	9.25 to 9.375
Lead, tea.....	7.75
Zinc.....	6.75

### Chicago

AUG. 20.—Inquiry for copper is fairly active, and there is some buying, but little of it is for future delivery. Copper consumers are watching the market closely, and it develops that the recent inactivity was chiefly on the part of the smaller melters. For tin there is only a routine demand, with more easiness than appears on the face of quotations. In lead there is practically no business, with both sellers and consumers apparently indifferent. Interest in spelter has not revived, and antimony pursues a monotonous course. We quote as follows: Casting copper, 26.75c.; Lake, 29c.; electrolytic, 27.50c.; tin, carloads, 63c.; small lots, 65c. to 66c.; lead, 10.50c.; spelter, 8.37c. to 8.50c.; sheet zinc, 19c.; antimony, 17c. to 18.50c. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 23c.; copper clips, 22c.; copper bottoms, 21c.; red brass, 21c.; yellow brass, 15c.; lead pipe, 8c.; zinc, 6c.; pewter, No. 1, 35c.; tinfoil, 40c.; block tin, 45c.

### Demand for Brazilian Zircon

Consul General Alfred L. M. Gottschalk of Rio de Janeiro, Brazil, reports to the Department of Commerce that Brazilian zircon appears to be becoming more and more a marketable product in the United States. An American company, he writes, is reported to be offering it here at \$50 to \$60 per ton. His report says:

Zircon is used chiefly in the manufacture of refractory crucibles and for the refractory linings of furnaces. It is therefore a material for which there may be increasing demand under the pressure that is being put on the steel industry of the United States.

Silicate of zirconia, the mineral known as zircon, is found in small crystals mixed with monazite in the sands out of which the Brazilian monazite is washed. In the processes of recovering monazite from these sands—processes carried on in Bahia, Espirito Santo, and in a smaller way in Minas Geraes and Rio de Janeiro—the zircon and the ilmenite (black oxide of titanium and iron) are separated. As the ilmenite has apparently no commercial value it is thrown away, but according to exporters zircon can be marketed at \$50 a ton with a small profit, in spite of high freight rates.

With the present electric separating machines it is practically impossible to remove all the monazite from the zircon, and a residuum of 2 to 6 per cent of monazite is bound, it appears, to remain with the zircon. This percentage, it is claimed, is irrecoverable and has practically no value.

It is stated that increasing quantities of zircon exports may be expected from Brazil provided this article is not too heavily burdened with customs duties in the United States and is classified as zircon and not as monazite.



## PERSONAL

George De A. Babcock, production manager H. H. Franklin Mfg. Co., automobile manufacturer, Syracuse, N. Y., has been commissioned a major to go to France in the supply division of the ordnance section of the U. S. Army. He is on an indefinite leave of absence from the company.

Maurice Joseph, general manager, the Joseph Joseph & Brothers' Co., Cincinnati, is absent on a vacation trip to eastern summer resorts.

Charles W. Rowlands, formerly secretary of the Crucible Steel Co. of America, Pittsburgh, and later with its sales department, has severed his connection with the company.

John B. Nicklas, who was formerly secretary of the Union Foundry & Machine Co., is now connected with the machinery sales department of the Somers, Fitler & Todd Co., Pittsburgh.

C. S. Vought, assistant general manager of sales American Steel Export Co., New York, sailed for France on Aug. 7, to attend to business for the company. He will be absent about 60 days.

William A. Hart, formerly of the Burroughs Adding Machine Co. advertising department, has joined the advertising staff of the Detroit Steel Products Co. as assistant advertising manager.

R. B. Farquhar, Jr., recently assistant superintendent of the foundry at the Midvale Steel Co. in Philadelphia, has received an appointment as superintendent of the Watertown Arsenal foundry at Watertown, Mass., and has accepted it. Mr. Farquhar has had a wide experience at the Taylor Iron & Steel Company, Highbridge, N. J., and at the Pennsylvania Steel Casting & Machine Co. as well as at the Midvale Steel Co.

George Satterthwaite has resigned as superintendent of the Midvale Steel Co., Philadelphia, and has been succeeded by Henry D. Booth, formerly in charge of munitions. Newell C. Bradley, as assistant superintendent, has resigned, and John L. Cox has been appointed assistant to superintendent in charge of engineering and research.

Eli Joseph, president Jos. Joseph & Bros. Co., New York, started last Saturday with friends on a month's hunting and fishing trip in Maine.

Edwin C. Eckel, having been appointed a captain in the United States Army, and attached to the American Expeditionary Force in France, has given up his private practice in engineering and mining geology and his office in the Munsey Bldg., Washington, has been closed. Captain Eckel writes: "I trust that my friends and associates, particularly those in the cement and iron industries, will accept this general statement in place of a more personal leave taking." His address is Headquarters, American Expeditionary Force, France."

Frederick P. Hurlburt, manager of the New York office of the Cleveland Crane & Engineering Co., Cleveland, is taking a six months' rest from work. He will spend three months in the Adirondacks and three months in the South.

W. W. Tarleton, heretofore of the Anniston Ordnance Co. and the Anniston Steel Co., has been made purchasing agent of the Southern Manganese Corporation, with offices in Birmingham and Anniston, Ala.

Oliver J. Abell, president Abell-Howe Co., Chicago, has been elected a director of the American High Speed Chain Co., Indianapolis.

J. P. Bennett, assistant superintendent of the rolling mills at the Steelton plant, Bethlehem Steel Co., has resigned to accept a position with the Keystone Steel & Wire Co., Peoria, Ill. Mr. Bennett has been connected with the Steelton plant for four years. He has been made assistant superintendent of the Peoria plant.

W. Lloyd Wolfe, Lebanon, Pa., who recently resigned as general superintendent of the local fur-

nace plant of the Bethlehem Steel Co., was given a dinner by his associates at Mineral Springs Park, Reading, prior to his departure for Holt, Ala., to become vice-president of the Central Iron & Steel Co. He was presented with a watch and chain and handsome clock. Mr. Wolfe has been succeeded at the Bethlehem furnace by Charles F. Entwistle, Steelton.

David Smith has been appointed superintendent of the merchant mill department of the Steelton, Pa., works of the Bethlehem Co., succeeding Richard Crouch, resigned.

Lincoln B. Patterson, of the Emporium Iron Co., Emporium, Pa., has been made superintendent of the West End furnace of the Old Dominion Pig Iron Corporation at Roanoke, Va.

B. A. Shutts, superintendent North Cornwall furnaces, Bethlehem Steel Co., Lebanon, Pa., has resigned, effective Sept. 1, to become superintendent of the Central Iron & Steel Co. Harrisburg, Pa. Mr. Shutts will be succeeded by Ira Hoover, Lebanon, who has been recently an assistant to the former superintendent, W. L. Wolfe, at the Lackawanna plant of the Bethlehem Steel Co.

Urged by friends, Archibald Johnston, vice-president Bethlehem Steel Co., has consented to be a candidate for mayor of the newly chartered city of Bethlehem, Pa. Petitions to have his name placed on the official primary election ballot contained the signatures of more than 5000 residents.

A. W. Gauger has resigned as secretary of the Pittsburgh section of the American Chemical Society, and has also been granted leave of absence by the United States Bureau of Mines, to accept a commission as first lieutenant in the sanitary engineering corps.

Edward Bennet has been appointed chief clerk of the Canton Sheet Steel Co., Canton, Ohio.

W. W. Wallace has accepted a position as chief engineer with the Hussey-Binns Shovel Co., Charleroi, Pa.

H. A. Richmond has been elected managing director and treasurer of the General Abrasive Co., Niagara Falls, N. Y., and has relinquished his connection with the American Emery Wheel Works of Providence, R. I., of which he has been president and technical expert for the past 20 years.

### Freight Service 26 per Cent Greater

Fairfax Harrison, chairman of the Railroads' War Board, reports that with an increase in equipment of only 3 per cent the railroads of the country rendered nearly 26 per cent more freight service in June this year than in the same month last year. Returns were received from 29 railroads having a combined mileage of 125,488 miles, or approximately half the total railroad mileage of the United States.

In June, 1916, these roads gave freight service equivalent to carrying 15,650,194,737 tons of freight one mile, while for the same month this year they carried 19,676,463,348 tons one mile. In June of last year the roads in question owned 1,284,160 freight cars. June this year found them with only 1,284,644, an increase of barely 3 per cent. The number of locomotives used by them to haul freight has been increased only one-half of 3 per cent. Intensive car loading plus an increase of 13.6 per cent in the number of miles a day which the railroads have been able to make their freight cars travel is largely responsible for the excellent showing for June. The distribution of empty cars, irrespective of ownership, into districts where they have been most needed, has also helped to increase efficiency.

The Adamson Mfg. Co., East Palestine, Ohio, maker of automobile accessories and specialties, has recently completed a large addition to its foundry, giving a total floor space of more than 50,000 sq. ft. The concern makes fine light gray iron castings, weighing one ounce to several pounds, and also manufactures the Adamson vulcanizer for repairing automobile casings and inner-tubes.

# Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 19.5c.; Philadelphia, 18.5c.; Boston, 21.5c.; Buffalo, 11.6c.; Cleveland, 10.5c.; Cincinnati, 15.8c.; Indianapolis, 17.9c.; Chicago, 18.9c.; St. Louis, 23.6c.; Kansas City, 43.6c.; Omaha, 43.6c.; St. Paul, 32.9c.; Denver, 68.6c.; New Orleans, 30.7c.; Birmingham, Ala., 45c.; Denver pipe, 76.1c., minimum carload, 46,000 lb.; structural steel and steel bars, 76.1c., minimum carload, 40,000 lb.; Pacific coast (by rail only), pipe, 65c.; structural steel and steel bars, 75c., minimum carload, 60,000 lb. No freight rates are being published via the Panama Canal, as the boats are being used in transatlantic trade.

## Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees 3 in. and over, 4.00c.

## Wire Products

Wire nails, \$4 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails, taking an advance over this price of \$2, and shorter than 1 in., \$2.50. Bright basic wire, \$4.05 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.95; galvanized wire, \$4.65; galvanized barb wire and fence staples, \$4.85; painted barb wire, \$4.15; polished fence staples, \$4.15; cement-coated nails, \$3.90 base, these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 43 per cent off list for carload lots, 42 per cent off for 1000-rod lots, and 41 per cent off for small lots, f.o.b. Pittsburgh.

## Nuts and Bolts

Discounts in effect for large buyers are as follows, delivered in lots of 300 lb. or more, when the actual freight rate does not exceed 20c. per 100 lb., terms 30 days net, or 1 per cent for cash in 10 days.

Carriage bolts, small, rolled thread, 40 per cent, small cut thread, 35 and 2½ per cent; large, 25 per cent.

Machine bolts, h. p. nuts, small, rolled thread, 40 and 10 per cent; small, cut thread, 40 per cent; large, 30 per cent.

Machine bolts, c. p. c. and t. nuts, small, 30 per cent; large, 20 per cent. Bolt ends, h. p. nuts, 30 per cent with c. p. nuts, 20 per cent. Lag screws (cone or gimlet point), 45 per cent.

Nuts, h. p. sq. blank, \$2.10 off list, and tapped, \$1.90 off; hex. blank, \$1.90 off, and tapped, \$1.70 off; nuts, c. p. c. and t. sq. blank, \$1.70 off, and tapped, \$1.50 off; hex. blank, \$1.60 off, and tapped, \$1.40 off. Semi-finished hex. nuts, 50 and 10 per cent. Finished and case-hardened nuts, 50 and 10 per cent.

Rivets 7/16 in. in diameter and smaller, 40 per cent.

## Wire Rods

Soft Bessemer and open-hearth rods to domestic consumers at \$90 to \$95; high-carbon rods made from ordinary open-hearth steel, \$95 to \$100, and special steel rods with carbons running from 0.40 to 0.60, \$100 to \$110 at mill; above 0.60 carbon, \$115 to \$120.

## Railroad Spikes and Track Bolts

Railroad spikes 9/16 in. and larger, \$7.00 base; ¾ in., 7/16 in. and ½ in., \$7.00. Boat spikes are occasionally quoted \$7.00 to \$8.00, all per 100 lb. f.o.b. Pittsburgh, but some makers are quoting higher. Track bolts with square nuts, 7c. to 7.50c. to railroads, and 8c. to 8.50c., in small lots, for fairly prompt shipment.

## Steel Rails

Angle bars at 3.50c. to 3.75c. at mill, when sold in connection with orders for standard section rails, and on carload and smaller lots, 4c. to 4.25c. at mill. Light rails, 25 to 45 lb., \$75 to \$80; 16 to 20 lb., \$80 to \$81; 12 and 14 lb., \$82 to \$83; 8 and 10 lb., \$83 to \$84; in carload lots, f.o.b. mill, with usual extras for less than carloads. Standard Bessemer rails, \$38; open-hearth, \$40, per gross ton, Pittsburgh.

## Tin Plate

Effective July 31, prices on all sizes of terne plate were advanced from \$2 to \$2.50 per package. Prices quoted by leading makers are now as follows: 8-lb. coating, 200 lb., \$16 per package; 8-lb. coating, I. C., \$16.30; 12-lb. coating, I. C., \$17.50; 15-lb. coating, I. C., \$18.25; 20-lb. coating, I. C., \$19; 25-lb. coating, I. C., \$20; 30-lb. coating, I. C., \$21; 35-lb. coating, I. C., \$22; 40-lb. coating, I. C., \$23 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

## Iron and Steel Bars

Steel bars at 4c. to 4.50c. for delivery late this year, and 4.50c. to 5c. from warehouse, in small lots for prompt shipment. Refined iron bars, 4.75c.; railroad test bars, 5.25c. in carload and larger lots f.o.b. mill.

## Wrought Pipe

The following discounts on steel are to jobbers for carload lots on the Pittsburgh basing card in effect from May 1,

1917, all full weight, except for LaBelle Iron Works and Wheeling Steel & Iron Co., which quote higher prices, and National Tube Co., which adheres to card of April 1.

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1½, ¾ and ¾	42	15½	1½ and ¾	23	+4
1½	46	31½	¾	24	+3
¾ to 3	49	35½	¾ to 1½	28	10
				33	17
Butt Weld			Lap Weld		
2	42	29½	2	26	12
2½ to 6	45	32½	2½ to 6	28	15
7 to 12	42	28½	7 to 12	25	12
13 and 14	32½	..			
15	30	..			
Butt Weld, extra strong, plain ends			Lap Weld, extra strong, plain ends		
1½, ¾ and ¾	38	20½	1½, ¾ and ¾	22	5
1½	43	30½	¾	27	14
¾ to 1½	47	34½	¾ to 1½	33	18
2 to 3	48	35½			
2	40	28½	2	27	14
2½ to 4	43	31½	2½ to 4	29	17
4 to 6	42	30½	4½ to 6	28	16
7 to 8	38	24½	7 to 8	20	8
9 to 12	33	19½	9 to 12	15	3

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are four (4) points lower basing (higher price) than the above discounts on black and 5½ points on galvanized.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers are seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe are nine (9) points lower (higher price).

## Boiler Tubes

Nominal discounts on less than carload lots, freight added to point of delivery, effective from Nov. 1, 1916, on standard charcoal iron tubes, and from April 2, 1917, on lap-welded steel tubes are as follows:

Lap-Welded Steel	Standard Charcoal Iron
1½ and 2 in.....31	1½ in.....23
2½ in.....28	1½ and 2 in.....35
2½ and 2¾ in.....34	2½ in.....32
3 and 3¼ in.....34	2½ and 2¾ in.....38
3½ to 4½ in.....34	3 and 3¼ in.....43
5 and 6 in.....33	3½ to 4½ in.....No quotations
7 to 13 in.....30	5 and 6 in.....37
	7 to 13 in.....34

Above discounts apply to standard gages and to even gages not more than four gages heavier than standard in standard lengths. Locomotive and steamship special charcoal grades bring higher prices.

1½ in., over 18 ft., and not exceeding 22 ft., 10 per cent net extra.

2 in. and larger, over 22 ft., 10 per cent net extra.

## Sheets

Makers' prices for mill shipments on sheets of United States standard gage, in carload and larger lots, are as follows, 30 days net, or 2 per cent discount in 10 days.

[Open-hearth stock, \$5 per ton above these prices.]

Blue Annealed—Bessemer		Cents per lb.
Nos. 3 to 8.....	8.00 to 8.50	
Nos. 9 and 10.....	8.25 to 8.50	
Nos. 11 and 12.....	8.50 to 8.75	
Nos. 13 and 14.....	8.75 to 9.00	
Nos. 15 and 16.....	9.00 to 9.25	
Box Annealed, One Pass Cold Rolled—Bessemer		
Nos. 17 to 21.....	8.30 to 8.80	
Nos. 22 and 24.....	8.35 to 8.85	
Nos. 25 and 26.....	8.40 to 8.90	
No. 27.....	8.45 to 8.95	
No. 28.....	8.50 to 9.00	
No. 29.....	8.55 to 9.05	
No. 30.....	8.65 to 9.15	
Galvanized Black Sheet Gage—Bessemer		
Nos. 10 and 11.....	9.00 to 9.50	
Nos. 12 and 14.....	9.10 to 9.60	
Nos. 15 and 16.....	9.25 to 9.75	
Nos. 17 to 21.....	9.40 to 9.90	
Nos. 22 and 24.....	9.55 to 10.05	
Nos. 25 and 26.....	9.70 to 10.20	
No. 27.....	9.85 to 10.35	
No. 28.....	10.00 to 10.50	
No. 29.....	10.25 to 10.75	
No. 30.....	10.50 to 11.00	
Tin-Mill Black Plate—Bessemer		
Nos. 15 and 16.....	7.80 to 8.30	
Nos. 17 to 21.....	7.85 to 8.35	
Nos. 22 to 24.....	7.90 to 8.40	
Nos. 25 to 27.....	7.95 to 8.45	
No. 28.....	8.00 to 8.50	
No. 29.....	8.05 to 8.55	
No. 30.....	8.05 to 8.55	
Nos. 30½ and 31.....	8.10 to 8.60	



## Book Reviews

**Handbook for Machine Designers, Shop Men and Draftsmen.** By Frederick A. Halsey. Pages, 561, 8½ x 11 in.; illustrated. Published by McGraw-Hill Book Co., New York. Price \$5.

When the first edition of this book appeared in 1913 it was justly characterized as one of the most valuable collections of data that had ever been placed in the hands of machine designers. The second edition has lifted the high standard attained in the first to a still higher plane, and it may safely be said that the book is indispensable to every designer and user of metal-working machinery. While it cannot take the place of the standard engineering pocketbooks, it supplements them with the practical usable shop information which is needed every day, and which properly has no place in the pocketbooks. A close comparison of this work with one of the best-known pocketbooks reveals comparatively few overlapping data. The designer and shopman equipped with this book and one of the pocketbooks will have little need for any greater engineering library.

From the standpoint of the author of general engineering treatises such as the one under review, it is unfortunate that engineering practice advances as rapidly as it does. This advance imposes on him the necessity of close watch on and careful study of the state of the art, otherwise his book will become obsolete in many sections, and will contain gaps in relation to the later developments. The author in the present case has recognized this duty and has discharged it in a brilliant manner. A simple list of the more important additions and revisions of the second edition fills one-half of one of the large pages of the book.

While it is impossible to give here these changes and revisions in detail, some of the more notable ones may be mentioned as follows: Bearings, including data on thrust, knife edge and roller bearings; gearing, including notes on herringbone, friction and worm gears, gaging of gear teeth, the cutting of bevel gears and parallel depth bevel gears, axial thrust of bevel gears, skew bevel gears; friction clutches; spiral springs of the watch spring type; pipe fittings and flanges; the measurement of tapers and dovetails; press fits, straight and taper; balancing of revolving parts; permissible cost of shop equipment; hardness tests, including the relation of Brinell and scleroscope numbers to each other and the strength of steel; heat treatment of steel, including the alloy steels. Many new tables have been added which enhance the value of the book to the practical man.

As in the earlier edition, much space has been saved by means of alignment diagrams, and the use of these convenient and accurate methods of presenting information has been extended.

The number of pages in the book has been increased by upward of 100, all of which represent highly condensed information. Its value to the user is therefore just that much greater.

**Organization and Accident Prevention.**—By Sydney Whitmore Ashe. Pages, 130, 6x9¼; illustrated by charts and half-tones. Published by McGraw-Hill Book Co., New York. Price, \$1.50.

Vigorous methods to develop caution in workmen, the author believes, must accompany the use of mechanical safety devices to make them effective in accident prevention. Fellowship, system, education and discipline, he says, may be effectively used for this purpose, and he describes in detail the application of each to general safety work. Considerable attention is also paid to the function of education in the prevention of specific accidents such as electric shocks, asphyxiation, etc., and numerous illustrations of the value of safety placards and bulletins are emphasized by the reproduction of some now in use. The prone pressure method of resuscitation is explained and illustrated as well as its application at the Pittsfield works of the General Electric Co. Other topics of interest are: Rules for wiremen, foundry safety work, accidents from defective hammers and upturned nails, punch press accidents, crane accidents, dangers from wood alcohol, infection from gasoline, and fire prevention. The relation of

tuberculosis and hernia to safety work is discussed under the broader topic, the medical examination of employees. Numerous suggestions regarding first aid and hospital work are offered. One chapter is devoted to the keeping of records, the analysis of data and curves showing the ratio of accidents to numbers employed, and another chapter to the relation between accidents and age diversity of population, labor turnover, and the health of employees.

**English and American Tool Builders.** By Joseph Wickham Roe. Pages, xvi + 315, 6½ x 9½ in. Published by the Yale University Press, New Haven, Conn. Price, \$3.

The development of machine tools is second in importance only to the invention of the steam engine in its effect on modern civilization. Indeed, the machine tool may lay a just claim to even greater importance than the steam engine, for upon it depends the manufacture of practically all of those devices and mechanisms which are essential to present-day comfort and progress. In fact, as the author relates, the steam engine was crude and imperfect, but little more than a scientific toy, until the first machine tools were built. These enabled the engine to be built with some semblance of accuracy and possibility of extensive use. The close interrelation of these two great inventions forms the subject of the earlier chapters of Professor Roe's book.

It is hard to believe, when the vast development and wonderful perfection of the machine tools of the present day are considered, that the machine-tool industry is but two years older than the United States. It was in 1774 that the first successful boring machine was built in England, although an attempt to build a machine for boring cannon had been made a few years earlier. It was this boring machine of Wilkinson that enabled Watt to make his steam engine a commercial success. From this humble beginning, crude though it was, has grown the vast machine-tool industry of to-day.

The earlier chapters of Professor Roe's book are of absorbing interest. He shows how, when the start had once been made, progress was rapid. The basic inventions followed each other at relatively short intervals, and the part that those masters of their trade, Wilkinson, Bramah, Bentham, Brunel, Clement, Maudslay, Murray, Fox, Roberts, Whitworth and Nasmyth are clearly portrayed. Particularly interesting is his settlement in favor of Maudslay of the long controversy for the credit for the invention of the slide rest, probably the most important single contribution to machine tools.

While the basic inventions must be credited to England, America, by the development of the system of interchangeable manufacturing, gave great impetus to their use, and stimulated the invention of specialized machines. These play such an important part in the economic life of to-day that they must be set down as of value almost equal to that of the basic inventions themselves. It is of interest to note here that this phase of the subject first came up in connection with the manufacture of munitions of war, and also that some of the earlier English inventions were stimulated by the needs of the British army and navy. The account of the work of Whitney and Colt in the introduction of interchangeable manufacture in American armories is particularly interesting.

Professor Roe traces the growth of the industry from these beginnings down to the great establishments of to-day. He brings in the names of men whose work is familiar to the present generation, such as Warner, Swasey, Lodge, Steptoe, Le Blond, Brown and Sharpe, Gould, Landis, Sellers and many others.

While the book is necessarily biographical in character, nevertheless the work of the men is indissolubly linked with their biographies. The reader, when he has finished it, will have a clear idea of the steps taken to bring machine tools to their present state of perfection, and the book might well be called a history of the machine tool. The author is to be commended for the great work he has done in putting on record the facts concerning this industry before they were irretrievably lost.

**The Iron Ores of Lake Superior.** By Crowell & Murray, Cleveland. Pages 315, 9¼ x 6½ in.; illustrated by numerous maps. Published by the Penton Press Co., Cleveland. Price, \$3.50.

This book, which has had two previous editions, is a valuable source of information. The authors have brought the facts up to date, have located the new mines on the maps, have rewritten and corrected errors in reading matter and have included some original papers of well-known men on subjects of interest. Among the papers are: Geology of the Wakefield Area of the Eastern Gogebic, by Mack C. Lake, geologist of M. A. Hanna & Co.; Progressive Development of the Cuyuna District, by Edmund Newton and Harlan H. Bradt, and Wetherbee Iron Ore Concentrator at Larue Mine.

**Fourth National Forum Trade Convention.** Pages 587, 9¼ x 6¼, issued by the Secretary, National Foreign Trade Headquarters, India House, Hanover Square, New York. Price, \$2.

This elaborate report of the convention held in Pittsburgh last January consists of a stenographic report of the proceedings, the discussions, the speeches at the several group sessions, the addresses of the banquet, together with the papers prepared in advance and a list of the delegates present, the organizations and companies represented and the organization of the convention and contains a vast amount of information in regard to foreign trade. The convention was the greatest of its kind ever held, and it is well to preserve its record in permanent form.

Poor's Manual of Industrials for 1917 has just been issued. The general information is revised to Aug. 1. The book is the largest work of its kind. It contains the latest income accounts and balance sheets of industrial companies, in which there is a public interest. These are in most cases presented in comparative form, showing at a glance the growth of the business. In view of the fact that during the past year the industrial organizations have had a phenomenal volume of business, Poor's Manual of Industrials is particularly interesting at this time. It is invaluable to the investor or banker interested in industrial securities. (Poor's Manual Co., 80 Lafayette Street, New York. Price, \$10 a copy.)

"The Determination of Nitrogen in Substances Used in Explosives" is the title of Technical Paper 160 of the U. S. Bureau of Mines by W. C. Cope and Guy B. Taylor. The bureau has had frequent requests for the methods used in its laboratories for determining nitrogen in nitro-derivations. This report covers not only these methods, but those used for all classes of compounds containing nitrogen used in explosives.

### Purchasing Agents Will Meet

The annual congress of the National Association of Purchasing Agents, to be held in Pittsburgh, Oct. 9, 10 and 11, will, it is estimated, have an attendance of 1500 men. The details of the convention are being worked out by Robert F. Blair, Pittsburgh Gage & Supply Co., who is chairman of the convention committee. E. L. McGrew, Standard Underground Cable Co., is national association's president. The William Penn Hotel will be headquarters.

A. W. Ransome, for nearly 20 years closely identified with the developing and manufacture of concrete machinery, has become connected with the Blaw-Knox Co., Farmers' Bank Building, Pittsburgh. For two years or more, Mr. Ransome has been developing and putting into practice patents on improved concrete machinery, all of which have been purchased by the Blaw-Knox Co., and will be marketed and probably further developed under his direction as manager and chief engineer of the mixer department of the above named company.

## Steel Supplies and the War

Discussing the hope that the increase in the production of steel both in the United States and in England would overtake the war requirements and provide some residue for ordinary commercial and industrial uses, the London *Ironmonger* said recently:

We do not know exactly to what extent British production has increased, as the published figures do not pretend to be more than approximately correct; moreover, statistics of past years are of little use at a time when the output is growing rapidly. The British steel production may now be estimated at between 10,000,000 and 11,000,000 tons a year, while the United States can turn out roughly 42,000,000 tons. France and Russia, particularly the last-named, may be left out of the calculation for the present, leaving an output of about 52,000,000 tons to reckon with. Of this practically the entire British production goes into war material, but probably not more than two-thirds of the American output can be relied upon for such uses, giving a total of about 38,000,000 tons a year.

Assuming that we are committed to a long war, the question arises whether 38,000,000 tons of steel is sufficient to carry it on. According to particulars recently published, some 6,000,000 shells were used in the operations that resulted in the capture of Messines. Reckoning these at an average weight of 1 cwt.—probably the average was higher—this would represent a consumption of about 300,000 tons of steel. Steel is used for many purposes other than the making of shells and it would probably be a generous estimate to allow half our annual supplies of war steel, or roughly 20,000,000 tons, for shell production. [A much exaggerated estimate.—Ed.] The steel trade will certainly be in the grip of the war for a long time to come, whatever progress may be made in production.

### Copper and Steel Prices

WASHINGTON, Aug. 21.—It was stated at the headquarters of the Federal Trade Commission to-day that a preliminary report upon the cost of producing steel and copper has been completed and will be transmitted to the President within a day or two. No information concerning the findings of the commission will be given out until the President acts upon the report. It was stated at the White House to-day that the President will probably find it necessary to devote several days' study to the report before he will be in position to give consideration to the actual fixing of basic prices for steel.

### New Steel Plant Starts

CLEVELAND, Aug. 22 (By Wire).—The Cromwell Steel Co., Cleveland, has placed its new steel plant at Lorain, Ohio, in operation, starting up one of its 75-ton open hearth furnaces last week and the second to-day. The two remaining furnaces will be in operation in about 30 days. Only ingots will be produced at present, as it will be several weeks before the finishing equipment is ready for operation.

The American Boron Products Co., Inc., 636 Court Street, Reading, Pa., has prepared a little message addressed to those who are to participate in the foundry meetings and exhibition at Boston in the week of Sept. 24. It ventures the prediction that the world by that time will have decided practically upon and "declared in favor of a reconstruction program rather than for further plans for destruction of the comparatively little that is left in the warring nations," and urges for the preparation for the "reconstruction boom" the desirability of remembering the advantage of co-operation between what may be termed the laboratory of the foundry industry and the foundry itself, or a complete understanding between science and practice, such as the meetings mentioned foster.

Fire, Aug. 14, destroyed a portion of the plant of the Bethlehem Steel Co., New Castle, Del., consisting of four buildings, with loss estimated at about \$25,000.



### Norwegian Market for American Machinery

A good deal of American machinery has recently come into the district of Stavanger, Norway. It is considered first class but United States Consul Maurice P. Dunlap considers it doubtful if the United States can hold the market in this line after the war, unless special efforts are made by individual makers. The great increase of Norway's material wealth, the development of the unused hydroelectric power in the mountain lakes and falls and the realization of the necessity of being more economically independent through the use of natural sources all increase the possibilities of Norway as a buyer in the American market for machinery. It seems likely, however, that as soon as the war is over the greater part of the orders will go to Germany. Reasons for the preference Norwegian engineers have for dealing with Germany are the following:

Norwegian engineers are practically all educated in Germany. They believe in the superiority of German methods and system, in the thoroughness of the instruction they have received and the superiority of that country's textbooks. Measurements, calculations and catalogs are all more intelligible to them than others.

Germany has for years had an almost exclusive market here for these products. Norwegians are conservative and prefer what they have tried to something new.

The opinion prevails that Germany can furnish wares more cheaply than other lands. High cost of production and freights are believed in most cases to put American machinery beyond reach. In bids for construction materials for public works, Germany is the first foreign country considered, then Sweden and England.

Much German material is already installed. When parts must be renewed they can be more easily obtained from that country. Other installations will usually not fit. For instance, a new patent electric stove ordered from America on trial could not be fitted to any electric socket because the sockets are made on the German plan.

Traveling agents from Germany are nearly always on hand to make contracts personally or to aid in installations. They usually speak Norwegian and take great pains to please possible customers.

American salesmen handling machinery and intending to visit Russia or other parts of Europe, should devote a little time to that part of Scandinavia. Even though they do not speak Norwegian, English is well understood there and personal courtesy backed up by good materials could do a great deal.

### Takes Over Canton Company

CLEVELAND, Aug. 22—(By Wire).—The Canton Sheet Steel Co., Canton, Ohio, has been purchased by Philadelphia interests, whose names have not yet been made public. The purchasers will acquire all of the company's stock consisting of \$563,000 par value in common stock at \$375 a share and \$1,000,000 of preferred stock at \$110. C. A. Irwin will remain in his present capacity as general manager and it is expected that nearly all of the present official organization will be retained under the new ownership. The company makes black and galvanized sheets and sheet metal products. The plant equipment includes seven black sheet mills, four cold mills and eight galvanizing pots. It now has nearing completion an open-hearth steel plant for making its own sheet bars. This consists of three 50-ton open-hearth furnaces and a continuous blooming and sheet bar mill.

### Will Build Aircraft

PITTSBURGH, Aug. 22—(By Wire).—The Benoist Aeroplane Co., Canton, Ohio, has been incorporated with a capital of \$500,000 for the purpose of making aircraft for war purposes and other uses. The company is building a plant at Canton for making airplanes and has an option on 360 acres of ground near Canton, which it will use for a land school in connection with its factory. The company is also operating a flying school at Sandusky, Ohio, at present under instructions of Elmer Straub, a well-known flyer.

### New American Company Shipping Brazilian Manganese Ore

That Manganese ore is being shipped from Brazil by a new American company is reported by United States Consul General Alfred L. M. Gottschalk of Rio de Janeiro. The company is said to have purchased four mines in the State of Bahia. The largest of these is in the municipality of Bom-Fim, northwest of the city of Bahia. It is accessible by the Central Railway of Brazil, but has not yet been explored to any extent. Three other mines are near the town of Nazareth, southwest of Bahia. They have no railroad outlets at present, and such ore as is mined must be taken by lighters to the Bay of Bahia and there placed aboard ship. These properties are said to be smaller than the one at Bom-Fim.

Only two ships have been loaded at Bahia with ore from these mines, the steamer Suffolk taking 4000 tons in the month of May and the Peter H. Crowell 4300 tons in April. Both vessels are of American register. It is claimed that much ore is in sight at all of these mines and American engineers who have been prospecting there are said to have reported very favorably upon them. The local agents of the American company mentioned estimate that with better railroad facilities from 15,000 to 20,000 tons of manganese ore could be shipped monthly from these mines, with Bahia as the point of general export. They claim, however, that even had they enough bottoms to carry 24,000 tons of ore monthly, the lack of sufficient railroad facilities to carry the mineral to tidewater is the important drawback. This is a general condition and applies to the State of Minas Geraes as well. In fact, it is the prevailing belief among technical men that the entire manganese problem of Brazil and, even further, the problem of disposing of its vast natural resources, is one of communications by highway in many interior districts and from the commercial centers of those districts by rail to tidewater.

### Coking Value of Illinois Coals

The Bureau of Mines, Department of the Interior, in co-operation with the Illinois State Geological Survey and the Department of Mining Engineering of the University of Illinois, has completed a study on the coking of Illinois coals, and has published the results of this investigation in Bulletin 138, by F. K. Ovtz. The tests indicate that coke from Illinois coal unmixed with other coals can be used for fuel purposes and that coke from mixtures of Illinois coal with low-volatile coking coal are suitable for some metallurgical work. It is also stated that the yield of ammonia was larger than is obtained from eastern coal. The quality of coke from Illinois coals alone and from mixtures of Illinois coals with low-volatile coals is described, and the uses for which the coke is suitable are discussed. The gas making properties and the value of the coals for making by-products are noted. Methods of preparing the coals, the impurities in them, and the effect of these on the value of the coals for coke and gas making are considered.

The second part of the report deals with the character of Illinois coals, their nature, physical properties, and chemical composition. The non-homogeneous structure of the coal and the variation in composition of different beds and even of the same bed in different localities are pointed out. The tests are considered under three classes: those with beehive ovens, those with by-product ovens and those with gas retorts. The results of a few tests of the coke for furnace or other use are given.

The Youngstown Sheet & Tube Co. is installing shower baths, toilet and clothes drier facilities in its puddling mills at Youngstown. The company recently bought 62 acres of ground at East Youngstown for use in connection with its project of building houses for employees. The new tract adjoins about 200 acres before acquired for that purpose, and which is now being platted and developed. Baseball ground and other athletic features will be included in the equipment of the new town for the benefit of employees.

## GREAT ORE PRODUCTION

## Lake Superior Region Produced 85 per Cent of Last Year's Total

The iron ore mined in the United States in 1916 reached a total of 75,167,672 gross tons, the greatest annual output ever made. The shipments from the mines in 1916 were 77,870,553 gross tons, valued at \$181,902,277. The quantity mined in 1916 was more than 19,600,000 tons greater than mined in 1915. The increases in quantity and in value of iron ore shipped in 1916 amounted to 40 and 80 per cent, respectively. The average value per ton at the mines in 1916 was \$2.34 as against \$1.83 in 1915. These figures, which were compiled under the direction of E. F. Burchard, of the United States Geological Survey, Department of the Interior, include for 1916 only iron ore containing less than 5 per cent of manganese.

**Iron Mining by States.**—Iron ore was mined in 24 states in 1916 and 23 in 1915. Minnesota, Michigan and Alabama, which have for many years produced the largest quantities of iron ore, occupied in 1916 their accustomed places.

*Iron Ore Mined in the United States in 1915 and 1916, in Gross Tons.*

State	1915	1916	Per cent of change in 1916
Minnesota	33,464,660	44,585,422	+33
Michigan	12,514,516	18,071,016	+44
Alabama	5,309,354	6,747,901	+27
New York	998,845	1,342,507	+34
Wisconsin	1,095,388	1,304,518	+19
Pennsylvania	363,309	559,431	+54
Wyoming	434,513	545,774	+26
New Jersey	415,234	493,004	+19
Tennessee	284,185	455,834	+60
Virginia	348,042	440,492	+27
Georgia	115,701	256,949	+122
New Mexico	34,806	157,779	+353
North Carolina	66,453	64,306	-3
Utah	(a)	45,514	(a)
Missouri	40,290	34,914	-13
Iowa	.....	11,351	...
Nevada	3,993	9,910	+148
Massachusetts	3,950	(a)	(a)
Maryland	5,500	4,455	-19
West Virginia	.....	3,605	...
California	646	3,000	+364
Ohio	3,455	1,800	-92
Other States <sup>b</sup>	23,650	28,190	+167
	55,526,490	75,167,672	+35

<sup>a</sup>Less than three producers in Massachusetts in 1916 and in Utah in 1915, and permission was not granted to publish State totals. Increase in 1916, therefore, included in "Other States."

<sup>b</sup>1915: Colorado, Connecticut, Idaho and Utah; 1916: Colorado, Connecticut and Massachusetts.

The Lake Superior district mined nearly 85 per cent of the total ore in 1916, and the Birmingham district about 8 per cent. No other district except the Adirondack mined as much as 1,000,000 tons. The increase in production in 1916 was especially marked in the Adirondack and Chattanooga districts, 54 and 55 per cent respectively, but every district showed an increased output over that of 1915.

## Will Blow in New Furnace

PITTSBURGH, Aug. 22—(By Wire).—The Whitaker-Glessner Co., Wheeling, W. Va., will blow in its new blast furnace at Portsmouth, Ohio, on Thursday, Aug. 23. It is a 500-ton stack and will furnish pig iron for the open-hearth steel plant of the company at Portsmouth. The stack was built by the Wm. B. Pollock Co. of Youngstown. The Whitaker-Glessner Co. is adding six new hot sheet mills at Portsmouth with a view of producing highly finished sheets. Contracts for these mills were placed some time ago, but the company does not expect to have the new mill in operation before the second quarter of next year.

The plant of the Framingham Machine Works has been re-equipped with machinery and appliances for the production of gray iron castings and the galvanizing of metal goods and will be known as the Framingham Foundries of Framingham, Mass.

The Republic Iron & Steel Co., Youngstown, Ohio, has commenced the construction of two new open-hearth furnaces.

## OBITUARY

## Henry Souther

Major Henry Souther, senior officer, aircraft engineering division, aviation section, Signal Corps, U. S. A. and vice-president Henry Souther Engineering Corporation, Hartford, Conn., died Aug. 15 in the post hospital at Fortress Monroe, Va., following an operation. He was born at Boston in 1865 and was graduated in 1887 from the Massachusetts Institute of Technology, where he specialized in mining and metallurgical sub-



HENRY SOUTHER

jects. After studying abroad the manufacturing methods and processes employed in the German iron and steel industry, he entered in 1888 the employ of the Pennsylvania Steel Co., at Steelton, and was made assistant foreman the following year. He was engineer of tests for the company from 1890 to 1893, resigning to become engineer of tests for the Pope Mfg. Co., a position which he held for six years. At the Pope works he organized the first testing plant ever installed, it is believed, by a consumer of steel for the scientific testing of materials and developed the use of cold drawn tubing for bicycles and automobiles. In 1894 he went abroad for the Pope company to investigate the manufacture of horseless vehicles which had just been begun, and was largely responsible for the first Pope model which was placed on the market in 1897.

When the Pope organization was dissolved in 1899 he engaged in business as an independent consulting engineer and established a metallurgical and testing laboratory and did consulting work for the automobile industry. He was president and treasurer of the Henry Souther Engineering Corporation from 1899 to 1909 and became president in 1911. Of late years he was not very active in the management of that organization and was vice-president and general manager of the Ferro Machine & Foundry Co., Cleveland, from 1913 to the outbreak of the war. Latterly he had charge of the aircraft development of the army and created a corps for the inspection of aircraft.

He was a member of the American Society of Mechanical Engineers and was prominent in the Association of Licensed Automobile Manufacturers. He was a founder member of what is now the Society of Automotive Engineers and had much to do with the develop-



ment of the iron and steel standards of that body. He was president of that society in 1911 and served as chairman of the standards committee for a number of years. In 1915 he was made a life member in recognition of this work. He leaves his widow and two married daughters.

OTTO P. STEHN, general sales manager Hydraulic Pressed Steel Co., Cleveland, died at Baltimore, Aug. 5, aged 41 years. He was born June 5, 1876, at Sheboygan, Wis., and the only educational advantages he had were the public schools of his birthplace. He worked for his grandfather, who was a small manufacturer in Sheboygan, for some time and later became a salesman of machine tools for the Northern Machine Co., Chicago. After several years as a salesman for other organizations he joined the selling force of Manning, Maxwell & Moore at Cleveland and subsequently became manager of that office. In 1911 he entered the employ of the Hydraulic Pressed Steel Co. as sales manager and developed the selling organization of that company. He leaves a widow and daughter.

HARRY CLIFTON ADAMS, vice-president of the Westmoreland Coal Co., Philadelphia, died Aug. 18. He was a graduate of the class of 1880, University of Pennsylvania; became connected with this company in 1881, was elected secretary in 1886, and in 1892 was elected vice-president in charge of sales. Mr. Adams was a recognized authority on gas coal, and wrote various papers on the gas coals of the United States.

GEORGE C. BLICKENDERFER, vice-president of the Blickenderfer Mfg. Co., Stamford, Conn., and inventor of the typewriter made by the company, died at his home in Stamford, Aug. 15. Since the beginning of the war, he had invented several devices which had been adopted by munitions makers.

FRANK W. DAVIS, manager of railroad sales of the Lake Erie Iron Co., Cleveland, died suddenly Wednesday, Aug. 8.

## \$750,000,000 MORE FOR SHIPS

### Government to Finance Higher Wages—Lake Vessels for the Atlantic

WASHINGTON, Aug. 21.—The United States Shipping Board is about to submit for President Wilson's approval an estimate for an additional appropriation probably in excess of \$750,000,000 to be expended in completing the board's program for an emergency fleet of cargo vessels, aggregating between 4,000,000 and 5,000,000 gross tons. The original figure of \$500,000,000, fixed for the additional appropriation by General Goethals, would be inadequate to meet the cost of the contracts already let and the large amount of tonnage confidently counted upon as the output of the two Government-owned shipyards about to be contracted for. President Wilson will be disposed to favor the expansion of the building program, but it is expected that he will give some consideration to the advisability of seeking so large a supplemental appropriation at this time.

#### Government Will Finance Wage Increases

Contracts for the Government-owned shipyards for the construction of fabricated steel vessels have been held up for the consideration of a number of minor details. There has also been a disposition to await assurances that the supplemental appropriation would be granted. The board has also been following with interest the developments in connection with the threatened nation-wide strike in steel shipyards. Information received here to-day indicates that the Government is preparing to assume the burden of an increased wage scale for work on all vessels heretofore ordered and it is understood that this advance will prevent the strike. Shipyard owners have been unwilling to concede increases amounting in most skilled trades to 50c. a day without specific authorization from the Government, and a pledge from the Shipping Board that the federal treasury will pay the difference on the contracts already taken over. It is thought the strike situation has been so much improved as the result of concessions by the

Government that it no longer threatens rapid progress with the program of the Shipping Board.

The Shipping Board will probably retain control of the foreign vessels now building in American yards, which have been commandeered along with vessels under construction for the American flag. This question has been held in abeyance pending negotiations with the British Government, but an agreement has now been reached under which the United States will reimburse the owners for all outlay and pay the builders for the completion of the vessels, after which they will go under the American flag to remain there indefinitely.

The plans of the Shipping Board for organizing an operating department have been finally worked out. An experienced railroad man will head the operating department, with three assistants, one to handle traffic on the Atlantic, another on the Pacific, while the third will be in charge of vessels in the South and Central American trades.

#### Lake Vessels for the Atlantic

For the purpose of increasing to the utmost the amount of trans-Atlantic and coastwise tonnage the Shipping Board is now considering diverting a large number of ships from the Great Lakes to the Atlantic. An estimate has been received showing the number of vessels which could be sent to tidewater through the canal, including those that would have to be cut in two, and it is believed that a very important addition to the Atlantic shipping could be secured in this way and with a minimum of hardship to shippers who rely upon lake vessels to carry their goods in view of the fact that all this tonnage is tied up during the winter. Most of the ships would not go back to the Lakes during the war but would be replaced by tonnage now building in Lake ports.

Real Admiral F. T. Bowles and Chief Constructor Snow of the Navy have been named as special assistants to Rear Admiral Capps, general manager of the Emergency Fleet Corporation. Admiral Bowles is regarded as one of the most competent men in the country for his new post. He served a long tour of duty as constructor of the Navy and subsequently resigned to become president of the Fore River Shipbuilding Company. Constructor Snow has been in charge of naval construction at the League Island, Philadelphia, yard, and is one of the leading experts in the service. Admiral Bowles at the outset will devote himself to speeding up construction work on ships building in American yards which were last week commandeered by the Shipping Board. Constructor Snow will serve as his aide in this work.

#### To Build More Destroyers

The Shipping Board has been informed that, as the result of the conference here between Secretary Daniels and more than a score of shipbuilders additional steps have been taken to add a large number of destroyers to the Navy at the earliest practicable date. The representatives of the leading shipyards present at the conference reported that their facilities were taxed to the limit by warships already under construction but that work on certain large vessels for the Navy might be postponed in order to build more destroyers.

#### Lack of Engine Building Capacity

The Navy Department is having difficulty in finding plants with adequate facilities for building engines for destroyers. As these vessels are very fast, the engines are required to have maximum power and minimum weight, a combination difficult to secure in any but specially designed power units. Naval experts are confident that as rapidly as engines can be procured hulls can be built and the additional destroyers fully equipped.

Every day adds to the evidence that the destroyer is the most formidable enemy of the submarine. The submarine commanders are fully alive to the danger of an attack by destroyers and rarely expose themselves within range of their guns. The average underwater speed of submarines is about 10 knots an hour and as troop transports make from 12 to 14 knots they do not fear the submarines if destroyers are employed to protect them ahead.

# Can Not Fix Prices for the Public

## War Industries Board Will Not Attempt to Exercise Such Power—Question of Prices for Allies Is Perplexing—Other Problems Pending

WASHINGTON, Aug. 21.—Developments of the past few days make it clear that the newly created War Industries Board will soon be called upon to meet squarely the issue concerning its authority to compel manufacturers to supply the war needs of the Allies at the same low prices as are to be paid by the American Government. It has been made equally clear that the board does not contemplate taking any definite steps to secure for the general public a lower level of prices than that now prevailing and that in its opinion additional legislation would be required to clothe it with power to do anything in this direction beyond the exercise of moral suasion.

It can be stated on high authority that the board has thus far received no definite refusal from any American manufacturer to furnish goods for the Allies at the same prices charged the United States. More than one manufacturer, however, has frankly expressed to the officials of the board a serious doubt as to the authority of anyone connected with the Government to prescribe the conditions governing dealings between American producers and the purchasing agents of foreign nations. It has also been pointed out to the board that however anxious domestic manufacturers are to co-operate with the Government and to help in winning the war, the interests of their stockholders cannot be sacrificed and individual officers of corporations are not justified in assuming the heavy responsibility of cutting prices not only on the goods required for the United States, but also those needed by the Allies, the combined requirements in some cases absorbing the entire output of large producing concerns. Under the circumstances, it is pointed out, there should speedily be a definition of the board's authority and, if necessary, the enactment of further legislation to clarify the situation and furnish a legal basis for the course which the board desires to pursue.

### Allies' Orders Accepted

Certain contractors are accepting orders on behalf of the Allies at the same prices paid by the United States. Others, while not definitely refusing, have demurred and have delayed undertaking the work involved. Some contractors, who have accepted orders for the Allies at the suggestion of the board, are carrying on animated correspondence with sub-contractors who have been invited to take a part of the business at less than market rates. An argument that is being urged in this connection is the effect of the enforcement of the board's policy upon the interest of the private consumer. The prices paid by the board on account of the United States are not generally regarded as representing a satisfactory return on the entire output of the average manufacturing concern; therefore, if these prices must also be conceded to the Allies, the loss must be recouped by raising rates to the private consumer, and this increase must be considerably greater if the Allies as well as the United States are to be supplied at cut prices.

At present, the board is considering several important questions. Can the issue be satisfactorily disposed of by negotiation with the leading producers? Can the Government buy as if for its own requirements and then sell to the Allies? If the Government cannot go into the business of buying and selling war supplies, will Congress authorize it to do so by specific legisla-

tion? Has Congress the constitutional power to compel an American manufacturer to sell his goods to a foreign nation or individual at fixed prices? Can the legislation providing new loans for the Allies be so drafted as to clothe the administrative officers with power to use the proceeds of these loans to buy for the Allies at reduced prices?

### A Mere Makeshift

There can be no doubt that negotiations can be relied upon to accomplish much in the direction of providing for the needs of the Allies, assuming, of course, that the Government does not insist upon unreasonably low prices. It is obvious, however, that with the great volume of business in prospect, any reliance upon individual negotiations in each case must be regarded as a mere makeshift. The weight of opinion is all against the authority of the Government to purchase war material and resell it to the Allies, especially if such transactions are resorted to because of the acknowledged lack of power in the Government to compel manufacturers to make concessions to the Allies. Existing statutes forbid administrative officials from disposing of any property belonging to the Government without special authority of law, and it follows that if the Government cannot sell, it cannot buy, as it has no available funds except such as are definitely appropriated from time to time for specified objects.

With all the circumstances in view, the simplest way out of the difficulty would appear to be through the enactment of legislation authorizing the administrative officers of the Government to expend the money loaned to the Allies, in whole or in part, in the purchase of war material and requiring manufacturers to sell for this purpose on terms to be fixed by the War Industries Board. Congress would no doubt feel justified in taking any risk that such a statute might be of doubtful constitutionality.

### Coal Prices Fixed

President Wilson issued an order this evening fixing the price of bituminous coal in all producing districts of the country. The order, which applies to every mine in the United States, virtually cuts the price in half. Figures show the actual reduction by the President's order to be 44 per cent in the specific case of Virginia coal, which furnishes the general ratio of reduction, although the new price to the navy is 50 per cent of the old. The price of a long ton of Virginia coal at the pier has been \$6.50. The new price is \$2.20 a long ton plus \$1.45 freight, or \$3.65 at the pier, 56 per cent of the old price and a reduction of 44 per cent. A price of \$2 a ton is fixed for the Pennsylvania, West Virginia and Ohio fields, which supply practically all the coal used in the Eastern States. The other prices range from \$1.50 to \$2 for Alabama fields to \$3 for Oklahoma. These compare with a price of \$3 offered by the Pennsylvania operators at the coal conference held here last June and the same figure presented by the West Virginia operators.

The prices fixed are practically \$1 a ton below the scale drawn up by the Peabody committee after a conference with the 400 coal operators last June.

President Wilson took the first step looking to governmental control of the coal industry by naming Robert S. Lovett of the War Industries Board as Director of Priority of Transportation, at the same time giving his official approval to an order issued by Judge Lovett directing that rail and steamship lines give bituminous coal shipments to the Northwest preference



over all other freight movements. It is expected that within a day or two the President, acting upon authority conferred upon him by the Lever food and fuel control act, will appoint a coal administrator charged with power to direct production and distribution of both bituminous and anthracite coal, coke, petroleum, etc.

### Eastern Freight Rates Increased 14 Per Cent

New freight rates from Pittsburgh to points east of that city went into effect Aug. 20. On rails and semi-finished material they represent a horizontal increase of 44 cents per ton, making the advance, say to Philadelphia, 17 per cent and to New England points 14 per cent. Against the old rate of \$2.56 per ton from Pittsburgh to Philadelphia is one now of \$3; similarly for New York district shipments, the old rate was \$2.76 and the new one is \$3.20, and for New England, the old and new rates are \$3.16 and \$3.60 respectively. On the whole, as noted in THE IRON AGE of July 5, the new rates average about 14 per cent higher than those obtaining up to this week and cover about one-fourth of the freight handled by the Eastern roads securing the advance.

On finished iron and steel, wire products, etc., the rates represent an increase of 12 per cent as for Rockland, Me., to about 17 per cent for Baltimore. The following table gives the recent and new carload lot freight rates and the new less than carload rates, and it is to be remembered that export freight rates are now the same as the domestic rates to Atlantic seaboard:

*Freight Rates on Finished Iron and Steel Products from Pittsburgh to Points Listed, Effective Aug. 20, Cents Per 100 Lb.*

	Old, Carloads	New, Carloads	New, Less than Carloads
Albany .....	16.9	19.5	23.0
Baltimore .....	15.4	18.0	21.5
Boston .....	18.9	21.5	25.0
Binghamton, N. Y. ....	14.2	16.5	19.5
Elmira, N. Y. ....	14.2	16.5	19.5
Harrisburg, Pa. ....	15.4	18.0	21.5
New York .....	16.9	19.5	23.0
Philadelphia .....	15.9	18.5	22.0
Rochester, N. Y. ....	12.2	14.0	16.5
Rockland, Me. ....	21.9	24.5	28.0
Syracuse, N. Y. ....	14.2	16.5	19.5
Utica, N. Y. ....	15.5	18.0	21.0
Richmond, Va. ....	21.3	24.5	29.5
Norfolk, Va. ....	21.3	24.5	29.5
Williamsport, Pa. ....	14.2	16.5	19.5

### Government Needs More Metallurgists

The National Bureau of Standards at Washington, Dr. S. W. Stratton, director, has not yet obtained all the men needed to fill metallurgical positions with salaries varying from \$1,200 to \$2,000, depending upon the training and experience of the candidate. Men are desired with experience either in ferrous or non-ferrous metallurgy. The duties will be almost entirely of an investigational nature in connection with problems of military importance. Qualified men are urged to communicate to the Bureau of Standards at once a statement of training and experience, names of references and minimum salary which would be accepted, so that they may be advised of appropriate civil service examination for which to file papers. Until further notice such papers are received by the Civil Service Commission at any time and rated promptly.

### McLain Furnace for Houston Foundry

McLain's System, Inc., Milwaukee, Wis., announces that it has closed a contract with the Lucey Mfg. Corporation, Houston, Tex., for a furnace designed to melt five tons when pouring medium and heavy castings and two tons when working on small and intricate castings of light section. The Houston company expects to melt steel about Oct. 1, which means quick delivery by the furnace builder.

The Marshall furnace, Newport, Pa., has increased the wages of all employees 15 cents a day, effective Aug. 16.

## SHIP CONTRACTS THIS WEEK

### Emergency Fleet Corporation Expected to Authorize Two Big Assembling Plants

Recent changes in the legal staff of the United States Shipping Board Emergency Fleet Corporation are believed to have caused the delay in the formal signing of contracts with the American International Corporation for its proposed ship plant on Hog Island, near Fort Mifflin, Pa., and with the Submarine Boat Corporation and the Lackawanna Bridge Co. for the plant which they propose jointly to establish on the Newark Meadows. Lawyers representing all parties are now examining the contracts and it is believed that they will be signed before the end of this week. The Merchants' Shipbuilding Corporation, which is affiliated with the Chester Shipbuilding Co., Philadelphia, is also expecting to close a contract this week with the Emergency Fleet Corporation. The latter company has a plant at Bristol, Pa.

All three plants will differ from the ordinary shipbuilding plants in that they will receive their steel already fabricated, and their work will, in reality, be more in the nature of an assembling proposition. About 20 per cent of the steel going into the ships will have to be fabricated on the premises, however, and for this equipment will be required. It is said that it is an easy matter to fabricate steel for the sides and bottom of the hull, but when it comes to the bow and stern, where bending of plates and shapes is required, the work must be more accurate and cannot be satisfactorily accomplished at a fabricating plant at a distant point.

Men have been at work for a week or two surveying the site for the plant of the American International Corporation on Hog Island. As soon as the formal contract is signed, actual work of erecting the necessary shipways and buildings will proceed rapidly. There will be 50 shipways at this plant and the contract will call for 200 vessels, if entered into as has been contemplated. The plant of the Submarine Boat Corporation and the Lackawanna Bridge Co. will be similar to that of the Hog Island plant, but it is understood that only 30 shipways will be built, and a correspondingly smaller number of vessels will be contracted for. It is expected that by the assembling process ships of 8000 to 10,000 tons can be built complete in about six to eight months.

The Board of Street and Water Commissioners of Newark, N. J., at a special meeting a few nights ago, agreed to renew for a period of 10 years the temporary lease which the Submarine Boat Corporation had taken on the site for its plant on the Newark meadows.

### More Cars for Government Railroad in France

For the United States Government's railroad in France, 3000 more standard gage cars have been bought. As noted on page 383 of last week's issue, the first award covered 6000 standard gage and 2997 narrow-gage cars distributed among six car builders. The lots of standard-gage cars have now been increased 50 per cent with each company, an arrangement spelling economy, inasmuch as there are at least six different types of car involved. There remains about 5000 cars to be placed and these, it is expected, will be given probably this week, largely to companies not yet participating.

The Youngstown Sheet & Tube Co., Youngstown, Ohio, has taken Government certificates of indebtedness to the amount of \$2,000,000. The notes are for a short term, being dated Aug. 10 and payable in November. This corporation has 1686 young men at its plant registered under the draft. Of this number it is expected that fully 1000 will be taken into the Government service for army duty. L. T. Campbell, son of President James A. Campbell, is at the officers' training camp at Fort Benjamin Harrison.

## Machinery Markets and News of the Works

### NEW GUN PLANTS EQUIPPING

#### Four Concerns to Forge Heavy Artillery

##### Airplane List Issued—Buying of Cranes For Railroad Work in France—Shipbuilding Concerns Are Placing Large Orders

Government ordnance, munitions, airplane and shipbuilding work continue to absorb most of the attention in machinery and machine-tool markets. It has just come to light that the Government has contracted with four concerns to forge guns, from 3 in. to 9.5 in., and plants are now being gotten ready. In addition to the \$1,500,000 plant of the Tacony Ordnance Corporation, mentioned last week, the Heppenstall Forge & Knife Co. is building a gun-forging plant in Pittsburgh and the Buckeye Steel Castings Co., Columbus, Ohio, and the Standard Steel Castings Co., Cleveland, are building additions to take care of gun work. These guns will be machined in various plants. The Bullard Machine Tool Co., which, it was announced, is going ahead with a new gun finishing plant, has purchased part of its equipment. One of its first purchases was 10 10-ton cranes. The American Radiator Co. is rapidly equipping a gun-machining plant at Bayonne, N. J., and its purchases have aggregated several hundred thousand dollars.

Various other ordnance and munition projects follow. Walter Scott & Co., Plainfield, N. J., printing press manufacturers, have obtained a Government contract for gun carriages and will require about 200 new machines. The Yale & Towne Mfg. Co., Stamford, Conn., has a mine contract, but it is said will not need much new equipment. The Bausch & Lomb Optical Co., Rochester, N. Y., which is making periscopes and gun sights for the Government, is buying additional tools and needs a number of automatic screw machines. The Goss Printing Co., Chicago, has taken a contract for sights on 4-in. guns and has placed orders in Chicago for new equipment. Stone & Webster, general contractors for the machine shop at the Rock Island Arsenal, will place orders through their Boston office for about \$1,500,000 worth of tools. Orders for 94,500 hubs for caisson and gun carriages have been distributed, the Wagner Electric Mfg. Co., St. Louis, and the American Car & Foundry Co., obtaining a large share. The latter concern has sub-let a part of its contract to the Rich Tool Co., Chicago. The Root & Van Dervoort Engine Co., Moline, Ill., is operating on an order for 40,000 8-in. shells. The A. O. Smith Co., Milwaukee, has issued a list of tools needed, and is presumed to be preparing to make munitions. The Wagner Electric Mfg. Co., St. Louis, has obtained contracts to build 1000 4-in. guns and \$3,000,000 worth of 8-in. shells. The Poole Engineering & Machine Co., Baltimore, Md., has been awarded a contract for 700,000 one-lb. shells. St. Louis manufacturers are being urged to build a special plant to make gun carriages.

The airplane program seems to be assuming more

definite form. Purchases of the Curtiss Aeroplane & Motors Corporation for its Buffalo plant will, it is said, aggregate \$1,000,000. Manning, Maxwell & Moore, Inc., which has the blanket order, sent out requests for bids last week. The Curtiss corporation is said to have orders aggregating \$200,000,000. The Simplex Automobile Co., New Brunswick, N. J. (Wright-Martin Aircraft Corporation) sent out a list last week, requesting bids on about 100 machines, and may duplicate this list soon. The company is reported to have received a Government contract and is asked to deliver 50 engines a day, which will necessitate increasing present capacity. The Sperry Gyroscope Co., Brooklyn, is expected to come into the market soon for equipment for a new factory, which will be busy on Government work. The Government is buying machine tools for an airplane plant of its own at Philadelphia, and also for repair stations at the aviation training fields.

Demand from shipbuilding companies continues fairly active. The Federal Shipbuilding Co., the Groton Iron Works and the Merchants' Shipbuilding Corporation (affiliated with the Chester Shipbuilding Co.) have been placing large orders. The Merchants' Shipbuilding Corporation bought 24 overhead electric traveling cranes for its 12 shipways at Bristol, Pa. The American International Corporation is reported to be going ahead now with its shipbuilding plant on Hog Island, near Philadelphia, and the Submarine Boat Corporation and the Lackawanna Bridge Co. will also proceed with their much-talked-of plant near Newark. Though details for these plants have not been fully worked out, it is said that there is no longer any uncertainty that they will be built. The Navy Department has contracted for about 50 torpedo boat destroyers, it is unofficially reported, with various large yards in the East.

Buying for the needs of the United States Army in France continues. The Pennsylvania Railroad Co. took bids up to Aug. 20 on seven cranes wanted for American railroad shops and for locomotive cranes for railroad construction work in France. The Quartermaster General's office in Washington has placed orders for belt-driven hammers, forging machines, bolt machines, etc., which presumably are wanted for motor and tractor repair shops in France. The Phoenix Construction Co., New York, has been placing orders on behalf of the Government for tools to be shipped promptly to France.

Several contracts for fuses are about to be placed in Washington, according to report, and companies which are expecting them have been making quiet inquiries for tools. Detroit motor truck companies are expecting additional truck contracts as the result of tests conducted on the Mexican border recently.

The Hay Foundry & Iron Works, Newark, is in the market for 10 5-ton cranes and Henry Steers, Inc., 17 Battery Place, New York, wants four small gantry cranes for pier construction.

French railroads want 40 to 50 locomotive cranes for railroad construction work. Australia wants power plant equipment and tools for new and expanding plants. General export trade is good, despite restrictions and scarcity of freight bottoms.



## New York

NEW YORK, Aug. 21.

War preparations are advancing steadily, but there has been somewhat of a lull in buying of machinery and machine tools in this market during the past week. However, the period has been by no means dull, except as it is compared with the extraordinary activity which has preceded.

One of the interesting developments of the week was the issuance of a list by the Simplex Automobile Co., New Brunswick, N. J. (Wright-Martin Aircraft Corporation), for about 100 lathes, milling machines, grinders, drills and automatic screw machines. It is said that another list approximating this one will soon be issued. The Simplex Company is reported to have obtained a contract from the Aircraft Production Board for a large number of Hispano-Suiza motors, delivery of which is requested at the rate of 50 per day. The Sperry Gyroscope Company, which is erecting a new 11-story building in Brooklyn for the manufacture of airplane apparatus, gyro-compasses and searchlights for the Government, will probably buy equipment soon. Inquiries were sent out during the week by Manning, Maxwell & Moore, Inc., which is buying equipment for the new plant of the Curtiss Aeroplane & Motors Corporation, Buffalo. The equipment purchases of the Curtiss corporation will aggregate about \$1,000,000. The concern is reported to have contracts worth \$200,000,000. The Government is also a large buyer of machine tools for airplane work, orders having been placed during the past week for the Government airplane plant to be built at Philadelphia and for the repair stations at aviation training fields.

Efforts of the Ordnance Department of the United States Army to increase the production of big guns seem to be bearing fruit rapidly. In addition to the gun forging plant to be built by the Tacony Ordnance Corporation, 50 Church Street, New York, at Tacony, Pa., as mentioned in THE IRON AGE last week, three other concerns will forge guns. The Heppenstall Forge & Knife Co., Pittsburgh, is building a new plant for such work and the Buckeye Steel Castings Co., Columbus, Ohio, and the Standard Steel Castings Co., Cleveland, Ohio, are building additions to their plants, and will engage in the work of forging guns as rapidly as possible. Some of this work will be begun about Sept. 1, the plant additions having been speedily erected and equipped. These guns will be sent to various plants for machining. The Bullard Machine Tool Co., Bridgeport, Conn., is buying equipment for the plant it will erect for the Government for machining guns. The American Radiator Co. is rapidly equipping its new plant at Bayonne, N. J., for the finishing of 4-in. guns, it having recently closed a big contract with the Government. The American Radiator Co.'s purchases of equipment aggregate several hundred thousand dollars. The lathe order, alone, is said to have totaled more than \$200,000.

A Government contract for gun carriages has been awarded to Walter Scott & Co., Plainfield, N. J., builders of printing presses, and this concern is buying about 200 new machines. The Yale & Towne Mfg. Co., Stamford, Conn., has obtained a contract for mines, but probably will not need much addition to present equipment. A number of contracts for time fuses are pending in Washington, and several concerns which are expecting to engage in this work have been quietly inquiring for new turret lathes and small tools. The Bausch & Lomb Optical Co., Rochester, N. Y., is buying additional equipment, and is said to be in need of many automatic screw machines for work on submarine periscopes and gun sights. The North East Electric Co., Rochester, N. Y., manufacturer of electric starting systems, is buying tools for a new machine shop it is erecting. Rubber tire companies are buying boring mills for making tire molds.

The Quartermaster General's Department of the United States Army has purchased two dozen or more belt-driven hammers, several forging machines, bolt machines, etc., presumably for motor truck and tractor repair shops in France. The machines are desired for early shipment. The Phoenix Construction Co., 41 Park Row, New York, has placed a number of orders for tools on behalf of the Government.

It is understood, though not officially announced, that the American International Corporation, New York, will go ahead with its steel shipbuilding plant on Hog Island, near Philadelphia, and that the Submarine Boat Corporation and the Lackawanna Bridge Co., New York, will now build a similar plant near Newark. Details of the plans are not yet fully worked out by the Emergency Fleet Corporation, but it seems certain now that the yards will be built. The Merchants Shipbuilding Corporation, which is affiliated with the Chester Shipbuilding Co., Philadelphia, is buying new equipment for the Bristol, Pa., plant. Twenty-four overhead electric traveling cranes for the shipways have been purchased from the Pawling & Harnischfeger Co., Milwaukee. The Federal Shipbuilding Co., New York, has been closing contracts for equipment on its list recently sent out. Lists

of other tools and cranes are expected soon. The Oscar Daniels Co., Woolworth Building, New York, is ready to go ahead with a shipbuilding plant at Brunswick, Ga., as soon as a contract is received from the Government. Inquiries for equipment may be sent out soon. The Groton Iron Works, New London, Conn., has received a Government contract for six steel vessels.

The Navy Department has awarded contracts for torpedo boat destroyers, it is reported, to the Fore River Shipbuilding Co., Newport News Shipbuilding & Dry Dock Co., New York Shipbuilding Corporation, William Cramp & Sons Ship & Engine Building Co., Union Iron Works and the Bath Iron Works. The total number ordered is believed to be about 50.

The Pennsylvania Railroad Co. received bids up to Aug. 20 for 12 5-ton, two 30-ton and four 65-ton cranes for the United States Army in France, these to be used in locomotive and car shops of the new American railroad. Bids for several locomotive cranes for construction work on the railroad were also received. Shipments of these cranes are to begin in six or eight weeks and must be completed within three months. The commander process will be invoked to obtain them within that short time. The Bullard Machine Tool Co., Bridgeport, Conn., awarded to the Pawling & Harnischfeger Co., Milwaukee, an order for 10 10-ton cranes for the gun plant to be erected for the Government. The Hay Foundry & Iron Works, Newark, N. J., is in the market for 10 5-ton cranes. Henry Steers, Inc., 17 Battery Place, New York, wants four small gantry cranes for work on pier construction in New York Harbor. Westinghouse, Church, Kerr & Co., New York, want a 3-ton crane for an addition to one of the plants of the Savage Arms Co. The Du Pont Co., Wilmington, Del., has purchased a number of hoists, electric and hand power, up to 1000 lb. capacity.

Export trade in machinery lines is excellent. The railroads of France are in the market for 40 to 50 locomotive cranes, Australia wants power plant equipment, machinery and tools for new manufacturing establishments.

Strikes of workers in the foundries of the Niles works and Bement works of the Niles-Bement-Pond Co. are embarrassing that company in delivering machine tools on Government work.

The business in machine tools, special and automatic machinery of Lewis Russell, 30 Church Street, New York, has been incorporated as Russell, Holbrook & Henderson, Inc., with an authorized capitalization of \$25,000. The business will be continued at the same address with enlarged facilities for doing business. The officers of the new corporation are Lewis Russell, president; C. H. Holbrook, vice-president; Lucien G. Henderson, secretary and treasurer.

The Sperry Gyroscope Co. is building an 11-story concrete factory, south side of Concord Street, west of the Flatbush Avenue extension, Brooklyn, to cost several hundred thousand dollars. This is to accommodate the rapidly growing business of the company, which results from Government orders for gyro-compasses, searchlights and airplane apparatus.

A. Schrader's Son, Inc., Brooklyn, mentioned recently as having purchased machine tools for making munitions, says that it is not making munitions, but is continuing the manufacture of its regular products, which include diving apparatus, tire valves, etc. The Government demand for diving apparatus is said to be considerable and the Schrader plant is extremely busy.

The Defiance Lantern & Stamping Co., Rochester, N. Y., has purchased the plant of the Wood Mosaic Co., same city, and will occupy it. This will give the Defiance company more room for the manufacture of its products and also gives it a location on a railroad siding. The Wood Mosaic Co. moved to New Albany, Ind.

The Ball Gear & Machine Co., Inc., Brooklyn, N. Y., has been incorporated with a capital of \$12,000 to manufacture boilers, engines and machinery. F. J. and G. M. Ball, and L. E. Eason, 233 Halsey Street, Brooklyn, are the incorporators.

The United States Aero Propeller Co., Inc., New York, has been incorporated with a capital of \$12,500 to manufacture aeroplanes and equipment for aircraft. The incorporators are C. N. Flint, F. Angelocj and F. A. Huck, 254 Echo Place.

S. Weisglass & Co., 110 West Street, Brooklyn, N. Y., manufacturers of brass beds, are making rapid progress in the construction of a new four-story and basement addition to their plant at Atlantic Avenue and Milford Street. The structure will be about 100 x 160 ft., and is estimated to cost about \$75,000.

The Charles T. Gullette Motors Corporation, New York, has been incorporated with a capital of \$50,000 to manufacture automobiles and motorcycles. L. H. Siebel, C. T. and E. T. Gullette, 421 West 119th Street, are the incorporators.

The Todd Shipyards Corporation, 15 Whitehall Street, New York, has awarded a contract for the construction of a three-

story building, about 100 x 150 ft., on Third Avenue, near Twenty-fourth Street, to cost \$70,000.

The Kar Engineering Co., Inc., New York, has filed articles of incorporation with a capital of \$125,000 to manufacture machinery and tools. M. and S. Karasick and G. P. Robbins, 129 East Eighty-second Street, are the incorporators.

Barber & Co., New York, have filed articles of incorporation with a capital of \$500,000 to operate a foundry and machine shop. A. Skillman, E. E. Hurley and A. Foshay, 120 Broadway, are the incorporators.

The P. H. Gill Forge & Machine Co., Loraine Street, Brooklyn, N. Y., is taking bids for a two-story addition to cost \$4,000.

The M. H. Keyless Lock Co., Inc., New York, has been incorporated with a capital of \$10,000 to manufacture special keyless locks. I. Heinz, J. Mainzer and R. Applebome, 224 Fifth Street, are the incorporators.

The Nametco Products Co., Inc., New York, has been incorporated with a capital of \$10,000 to manufacture metal supplies of various kinds. M. Halperin, M. Levin and I. Krainess, 88 Walker Street, are the incorporators.

The Christian Machine Co., 30 Church Street, New York, plans for the construction of a new one-story concrete building, about 75 x 100 ft., on Richmond Terrace, West New Brighton, Staten Island.

Kahn Bros., 785 Humboldt Street, Brooklyn, N. Y., manufacturers of metals and kindred specialties, will build a new one-story brick addition to their plant, about 145 x 240 ft., to cost \$18,000.

Samuel B. Howard, 65 Cedar Street, New York, L. H. Gunther and John H. Moore, also of New York, have incorporated in Delaware the United States Airplane & Engine Co., with a capital of \$1,500,000 to manufacture engines for airplanes and automobiles.

The Safety Machinery Corporation, New York, has been incorporated with an active capital of \$150,000 to manufacture clutch and brake equipment and safety devices of various kinds, particularly for sewing machines. J. J. Axilrod and H. and H. Frankel, 318 East Thirty-second Street, are the incorporators.

The Watson-Stillman Co., 50 Church Street, New York, manufacturer of hydraulic pumps, tools, etc., will build a new one-story machine shop, about 60 x 130 ft., at its works, Roselle Park, N. J. Contract for erection has been awarded to William Clifford & Sons Co., Elizabeth, N. J.

The Sheffield Iron Corporation, New York, has been incorporated with an active capital of \$777,500 to manufacture iron and steel products. J. R. Floyd, J. Gayley and H. K. Wood, 65 Cedar Street, are the incorporators.

The Lopez Shock Absorber Mfg. Co., New York, has filed articles of incorporation with a capital of \$25,000 to manufacture shock absorbers and hardware specialties. J. Murla, J. M. Lopez and B. A. Quires, 120 Broadway, are the incorporators.

The McDowell Ash Sifter Co., Inc., New York, has been incorporated with a nominal capital of \$5,000 to manufacture ash sifters and other sheet metal products. M. L. Wohltman, G. McDowell and S. F. Glover, 383 Pearl Street, are the incorporators.

The General Electric Co., Schenectady, N. Y., is taking bids for the construction of a new brick and reinforced concrete forge shop addition to its works, one-story, 80 x 400 ft.

The Mogul Tirés Co., Inc., Pearl River, N. Y., has filed articles of incorporation in Delaware with a capital of \$2,500,000 to manufacture automobile tires and other rubber goods. Arthur R. Oakley, Pearl River, N. Y.; William E. Shields, Jr., Brooklyn, and Richard A. Webster, New York, are the incorporators.

The Linn Mfg. Corporation, Morris, near Oneonta, N. Y., manufacturer of farm tractors, has commenced the erection of a new one-story plant to cost about \$8,000. W. H. Linn is president.

The Gleason Works, 1000 University Avenue, Rochester, N. Y., manufacturer of gears, etc., has awarded the contract for its proposed new factory extension. The structure will be one and two-story reinforced-concrete, about 50 x 120 ft., and will cost \$75,000. The Alexander, Shumway & Utz Co., Exchange Place Building, Rochester, has the contract for construction.

The Lindner Laundry Machine Co., Buffalo, has been incorporated with a capital of \$10,000 to manufacture laundry machinery. William W. Lewis and John H. Brogan, Buffalo, and Arthur Lindner, Rochester, are the incorporators.

The Donner Steel Co., Buffalo, has filed plans for the construction of a one-story addition to its plant on Abbott Road to cost about \$10,000.

The Tiffany Never-Wind Clock Corporation, Buffalo, has been incorporated with an active capital of \$150,000 to manu-

facture electric clocks. W. C. Newcomb, E. M. Gunnison and I. L. Fisk, Buffalo, are the incorporators.

The proposed extensions to the plant of the Sizer Forge Co., 238 Larkin Street, Buffalo, will consist of a one-story brick and steel addition, 40 x 88 ft.; electric furnace, 90 x 210 ft.; and scrap yard, 40 x 320 ft. The work is estimated to cost \$110,000.

The H. G. Trout Co., 226 Ohio Street, Buffalo, manufacturer of iron and brass castings, has awarded a contract for the construction of two one-story additions to its plant, 52 x 80 ft., and 40 x 50 ft., comprising foundry and blacksmith shop, respectively. The extension will cost about \$18,000.

The Somerset Motors Corporation, Plainfield, N. J., has been incorporated with a capital of \$25,000 to manufacture automobiles, etc. C. Holt, Jr., 149 East Fourth Street; F. L. Holt, and I. L. Englehart, are the incorporators.

The United States Government is planning for the construction of a new two-story brick and stone assembling works at its Picatinny Arsenal, Dover, N. J.

The New York Belting & Packing Co., Passaic, N. J., has taken bids for the construction of a five-story and basement brick and reinforced-concrete addition to its plant, about 90 x 250 ft. Lockwood, Greene & Co., 101 Park Avenue, New York, are the architects.

The Worthington Pump & Machinery Corporation, Harrison Avenue, Harrison, N. J., has commenced the erection of a one-story brick addition to its pump works, 150 x 400 ft., to cost about \$200,000.

The Riverside Steel Casting Co., Plant Road, Kearney, N. J., has filed plans for the erection of an addition to its foundry in the meadows section.

Rapid progress is being made in the construction of the new foundry of Reuther Bros., 415 Middlesex Street, Harrison, N. J., specializing in the production of gray iron castings. The new plant will cost about \$40,000.

The American Smelting & Refining Co., Perth Amboy, N. J., has commenced the erection of a new tin furnace plant, about 40 x 115 ft., at its works.

The Gamon Meter Co., 282 South Street, Newark, N. J., manufacturer of water meters, is establishing a new plant at Mulberry and Murray Streets for the manufacture of tools, fasteners and other water meter equipment, replacing the tool works formerly located outside of the city limits. The new plant consists of a three-story structure, about 45 x 225 ft.

The Building Committee of the Common Council, Newark, N. J., will receive bids until Sept. 4 for the installation of a refrigerating plant at the City Hospital.

The Hanson & Van Winkle Co., 269 Oliver Street, Newark, N. J., manufacturer of dynamos and kindred specialties, has awarded a contract for the construction of an extension to its plant at Adams and Chestnut Streets.

The Whitehouse LeCompte Mfg. Co., 44 Elm Street, Newark, N. J., manufacturer of hardware, has increased its capital from \$200,000 to \$300,000.

The Board of City Commissioners, Bayonne, N. J., has authorized an appropriation of \$25,000 for the purchase of new machinery for the City Vocational School. A new one-story extension will be erected to the school to provide for the installation of the new equipment.

## New England

Boston, Aug. 20.

Orders and inquiries coming to metal working plants of all kinds show a sharp increase in volume. Virtually all the orders are for industries outside of New England and come from widely varied sources. So far the increased demand has not been reflected in a corresponding expansion of New England plants but reports of contemplated additions to plant and equipment are more numerous and the completion of the pending legislation affecting prices and taxes will surely be followed by a period of industrial growth commensurable with the large total value of the orders flowing into this section for machine tools, general and special machinery, small tools, jigs and gages, forgings and castings.

The Stanley Works, New Britain, Conn., is to build a billet mill, 100 x 160 ft., one story, and a hoop mill, 45 x 260 ft., with a wing 55 x 60 ft., one story.

The Nutting Mfg. Co., Worcester, Mass., has been incorporated with authorized capital stock of \$10,000 to manufacture machinery, pressed metal goods and screw machine products. The directors are George H. Stearns, president; Jason C. Stearns, treasurer; Charles H. Prior and Archer I. Nutting.

The Commercial Machine Co., Franklin, N. H., is building a machine shop, 96 x 98 ft. The company has a force working at the Esty machine shop, Laconia, N. H., on a Government contract.



The American Whaley Engine Co., Boston, has been incorporated with authorized capital stock of \$1,000,000. The directors are George C. Coit, president; Henry A. Stebbins, 136 Federal Street, treasurer, and Thomas S. Spinney.

J. Byron Colvin, Worcester, Mass., who has been managing the foundry of the late James A. Colvin for the past year, has bought the business and property, which has an assessed valuation of \$26,500. The new owner will continue the business.

The Paper Products Machine Co., Boston, has been incorporated with capital of \$50,000. The directors are Patrick T. Jackson, Jr., president; Charles H. Howard, Cliftondale, treasurer, and John Noble.

The Fitchburg Automatic Machine Co., Fitchburg, Mass., has secured a permit to erect an addition, 30 x 66 ft., to cost \$4,000.

The Baker Machine Co., New Bedford, Mass., has been incorporated with capital stock of \$12,000. The directors are Luke T. Keith, president; Frank H. Macy, treasurer, and I. E. Baker.

The Deane Steam Pump Works, a subsidiary of the Worthington Pump & Machinery Corporation, Holyoke, Mass., has purchased a tract of land adjoining its present property and contemplates building a one-story addition.

The Worcester Machine Screw Co., Worcester, Mass., has had plans drawn for a new building, 51 x 115, 60 x 75 and 42 x 45 ft., five and one-story sections.

Butterfield & Co., Derby Line, Vt., contemplates building an addition, 68 x 165 ft., three stories.

The Potter & Johnston Machine Co., Pawtucket, R. I., has awarded a contract for an addition, 48 x 290, 49 x 141 and 49 x 141 ft., one story.

The Wyman & Gordon Co., Worcester, Mass., has awarded a contract for an addition to a forge shop, 40 x 100 ft., one story.

The Sperry & Barnes Co., New Haven, Conn., has filed plans for the construction of a new one-story blacksmith shop, about 52 x 52 ft., at Long Wharf.

The Taunton-New Bedford Copper Co., West Water Street, Taunton, Mass., has awarded a contract for the construction of a new one-story machine shop, about 60 x 100 ft., to cost \$10,000.

The American Steel & Wire Co., Fair Haven, Conn., will build a new one-story wire rope mill addition to its plant, about 70 x 200 ft. C. W. Murdock, New Haven, has the contract for construction.

## Philadelphia

PHILADELPHIA, Aug. 21.

The Midvale Steel Co., Philadelphia, is taking bids for the erection of a new machine shop addition at its Nicetown works.

The Cosmic Metal Co., Philadelphia, a Delaware incorporation, has increased its capital from \$500,000 to \$1,000,000.

J. & G. Sutton, operating a roofing and sheet metal works at 866 Locust Avenue, Philadelphia, have filed plans for the construction of a new one-story brick shop building, about 20 x 70 ft., on Chelton Avenue.

The Keystone Emery Mills, 4329 Paul Street, Philadelphia, manufacturers of abrasive materials, are having plans prepared for the construction of a new two-story brick extension, about 36 x 100 ft.

The Fox Motor Co., Philadelphia, has been incorporated in Delaware with a capital of \$100,000 to manufacture motors. F. R. Hansell, Philadelphia; S. C. Seymour, and J. Vernon Pimm, Camden, N. J., are the incorporators.

The Pierce Arrow Tire & Rubber Co., 932 North Broad Street, Philadelphia, will soon call for bids for the construction of a new two-story factory, 160 x 225 ft., at Twenty-first and Lippincott Streets to cost about \$150,000. J. Osborn Hunt, 114 Montgomery Street, Trenton, N. J., is architect.

The Public Service Corporation, Trenton, N. J., has acquired property at Brunswick and New York Avenues adjoining its power plant, and plans for the construction of extensions. The proposed new buildings and equipment will cost about \$200,000.

The American Steel & Wire Co., Hamilton Avenue, Trenton, N. J., has filed plans for the erection of a new wire rope mill addition to its plant, about 100 x 310 ft., to cost \$35,000. The company will also build a new one-story machine shop, about 50 x 70 ft., to cost \$9,000.

The Delion Tire & Rubber Co., Trenton, N. J., has awarded a contract for the construction of a two-story addition to its plant, about 60 x 270 ft., on Whitehouse Road. J. H. Morris, Broad Street Bank Building, Trenton, is the contractor.

The Essex Rubber Co., Beakes and May Streets, Trenton,

N. J., manufacturer of mechanical rubber goods, has had plans prepared for a one-story addition to its plant to cost about \$20,000.

The Imperial Porcelain Co., Trenton, N. J., manufacturer of electrical porcelain specialties, has awarded contracts for its proposed new plant at Manasquan, N. J., to cost \$50,000. Three one-story structures will be erected for the initial works, 100 x 100 ft.; 60 x 360 ft., and 30 x 40 ft. The Austin Co., 1319 Filbert Street, Philadelphia, is the contractor.

The Eagan Rogers Steel & Iron Co., Crum Lynne, Pa., specializing in the production of iron and steel castings, is building additions to its plant to double the present capacity. The company has received orders from the Government for a quantity of castings.

The American Car & Foundry Co. is making rapid progress with the erection of a large addition to its Bloomsburg, Pa., local plant. New equipment and machinery is being installed to handle an order received from the United States Government.

The Denite Steel Co., New Eagle, Pa., has been incorporated with a capital of \$100,000 to operate a local plant for the production of steel products. S. A. Davis heads the company.

The Richard Mfg. Co., Bloomsburg, Pa., is operating its plant at full capacity for the manufacture of wire-drawing machinery and allied equipment. The company has recently reopened its foundry, closed for a considerable period, to provide for increased operations.

The Hahn Motor Truck & Wagon Co., South Fourth Street, Hamburg, Pa., manufacturer of motor trucks, wagons and parts, is building a new one-story extension, about 64 x 120 ft., to be used as an assembling works. The structure will cost \$10,000.

The Jeanesville Iron Works, Hazleton, Pa., is planning for early operations at its plant for the manufacture of shells. Considerable new equipment is being installed to handle a large order for munitions from the United States Government.

The State Department of Education, Harrisburg, Pa., is planning for the establishment of a new vocational high school at Blain. A shop building will be provided for instructions in scientific and general work.

The Federal Equipment Co., West and Lincoln Streets, Carlisle, Pa., is building a one and three-story addition to its plant to cost about \$10,000.

The Righter Castings Co., Columbia, Pa., has been organized by Noble C. Righter to operate the former plant of the Shawnee Brass & Iron Foundry Co., recently acquired. It is proposed to commence operations before the close of the month. The present capacity will be considerably enlarged and extra hands employed.

Fire recently destroyed a portion of the sheet metal plant of Grant C. Knobbs, 2522 Smallman Street, Pittsburgh, with loss estimated at \$8,000. It is said that the plant will be immediately rebuilt.

The Camden Forge Co., Mount Ephraim Avenue, Camden, N. J., manufacturer of iron and steel forgings, has filed plans for the erection of a one-story addition to its plant, about 80 x 100 ft., to provide for increased capacity.

The Apex Machine Co., Philadelphia, has been incorporated with a capital stock of \$25,000 to manufacture machinery, tools and mechanical devices. The incorporators are W. C. Arnold, 3626 Hamilton Street, Frank J. Riera, Jr., 228 East Meade Street, H. Wolfenden, 4651 Sheldon Street, all of Philadelphia.

## Baltimore

BALTIMORE, Aug. 20.

Morrow Brothers, Fidelity Building, Baltimore, have been awarded the contract for the construction of buildings and shipways for the Maryland Shipbuilding Co.

The West Construction Co., American Building, Baltimore, has been awarded the contract for the construction of additional buildings for the Baltimore Dry Docks & Ship Building Co.

The Baltimore Tube Co., Wicomico and Ostend Streets, Baltimore, has purchased more land in the vicinity of the present plant. No announcement of plans has been made.

The Tin Decorating Co., Boston Street and Linwood Avenue, Baltimore, will construct two additional one-story buildings.

The Pusey & Jones Co., Wilmington, Del., will construct three additional buildings at a total cost of about \$70,000. The new buildings will consist of a two-story steel and brick machine shop, 60 x 100 ft., to cost about \$30,000; a three-story, 40 x 60 ft., steel and brick toolhouse, to cost about the same amount, and a three-story addition to the mold loft to cost about \$10,000.

The Chesapeake Shipbuilding Co., Baltimore, Md., recently incorporated with a capital of \$100,000, has acquired property consisting of about 75 acres at Curtis Bay for the construction of its new shipbuilding plant. The proposed works will comprise machine shop, erecting works, and other structures and shipways. Sheldon H. Tolle, James H. Foster and Roger C. Hyatt, all of Cleveland, will head the company.

The Maryland Brass & Metal Works, Guilford Avenue and Federal Street, Baltimore, Md., has awarded a contract for the construction of a new foundry, 46 x 90 ft., to cost \$15,000. William Gleriel is president.

The Pusey & Jones Co., Wilmington, Del., has filed plans for extensions at its shipbuilding plant to cost about \$70,000. The structures will include two-story brick and steel machine shop, 60 x 100 ft., to cost about \$30,000; three-story tool house, 40 x 60 ft., \$30,000; and two-story general shop addition, \$10,000.

The Hupp Mfg. Co., Asheville, N. C., has recently been incorporated with a capital of \$500,000 to manufacture machinery. T. H. Smith, Knoxville, Tenn.; J. M. Boone, Bryson City, N. C., and H. E. Groover, Asheville, are the principal incorporators.

The York River Shipbuilding Co., Mutual Building, Richmond, Va., is planning for the erection of a shipbuilding plant at Westpoint, Va., to cost about \$250,000. The initial works will consist of machine shop, erecting shops, etc., to a total of about 10 buildings, with power plant for operation. William Moore is president.

The Chesapeake & Ohio Railroad, Richmond, Va., has had plans prepared for a new one-story engine house and shop building to be erected at Raleigh, W. Va., at a cost of about \$15,000. The structures will be 58 x 140 ft., and 30 x 70 ft., respectively.

The American Car & Foundry Co., Huntington, W. Va., is arranging to award contracts for the erection of structural steel frame machine and blacksmith shops at its local plant, to replace structures recently destroyed by fire. Headquarters of the company are at St. Louis.

The Porcelain Enamel & Mfg. Co., Eighth Street, Canton, Ohio, is having plans prepared for a new plant to be erected on Bayard Street, Baltimore, Md., at a cost of about \$200,000. P. O. Keilholz, Continental Building, Baltimore, is engineer for the company.

## Chicago

CHICAGO, Aug. 20.

The pressure on machinery makers and dealers is almost entirely confined to large heavy machines, including lathes, planers, punches and shears, bending rolls, etc., required for the manufacture of large guns and shipbuilding. With all such tools, deliveries are many months away, and when sales are made, prices are not always definitely fixed. In the case of an 18-ft. planer, for instance, the price named is only tentative, it being agreed that the price may be increased up to 10 per cent should conditions at time of delivery warrant an advance, this arrangement being made because of uncertainties pertaining to the cost of materials and the desire of the builders to protect themselves against further advances. Pig iron at \$55 per ton is of itself a big item in a tool that weighs many tons. The demand for smaller machines, coming from miscellaneous sources, is a little easier with most of the dealers, but this condition will change quickly should the Government place more orders for shells. Heretofore it has been mostly the tractor and ordnance makers who have been buying and who still are expected to take considerable equipment.

Additional war orders for machine tools are nearer fruition, inasmuch as several firms have received Government contracts, and more are bidding on such business. The Goss Printing Press Co., Chicago, has a contract for sights on 4-in. guns, and has placed some orders for tools. The company has inquired for steel castings as well as for the tools to machine them. The list of tools which will be bought by Stone & Webster for the machine shop they are building at the Rock Island Arsenal, previously reported, will total no less than \$1,500,000. The buying will be done at the home office of the company in Boston, Arthur Fuller having charge, but action will be determined by recommendations from the arsenal. The machines will be set up as well as purchased by Stone & Webster. The new shop will replace the old one, the latter being used for storage purposes. Orders for 94,500 hubs for caisson and gun carriages have been distributed, the Wagner Electric Co., St. Louis, receiving an order for about 30,000 hubs for 56-in. wheels. The original requirement was 61,000 56-in. (wheel) hubs, 2500 58-in. hubs and 31,000 60-in. hubs. The American Car & Foundry Co. has a contract for a part of the total number and has sublet a contract to the Rich Tool Co., Chicago.

It is stated authoritatively that not many metal working tools will be required for the building which is being con-

structed at the Rock Island Arsenal by Westinghouse, Church, Kerr & Co. as it is to be used for shell loading.

The Root & Van Dervoort Engine Co., Moline, Ill., already operating on an ordnance contract, has received an order for 40,000 8-in. shells. The company successfully executed a foreign shell order. A good-sized list has been issued by the A. O. Smith Co., Milwaukee, Wis., maker of automobile stampings, and inasmuch as the inquiry includes lathes, it is surmised by the trade that the company has a contract or sub-contract for war supplies.

Moline and Rock Island, Ill., are busy places because of the activities of the arsenal, the Root & Van Dervoort Engine Co. and the tractor department of the Moline Plow Co.

Bids are being received by W. P. Whitney, architect, 122 South Michigan Avenue, Chicago, for a one-story mill construction manufacturing building, 50 x 200 ft., at Wauconda, Ill.

All bids for the industrial school to be built for the Chicago & Cook County School for Boys having been rejected, it has been decided to have the work done by the day under the supervision of the Bureau of Engineers. A bond issue of \$250,000 is available.

Contracts have been awarded for a seven-story manufacturing building, 130 x 150 ft., at 1032 to 1046 Kingsbury Street, Chicago, for Louis Schetnitz. It will be of reinforced concrete construction, cost \$150,000, and be erected under the supervision of the John P. Cowing Engineering Co., 30 North La Salle Street, Chicago.

Contractors are working on plans for the preliminary construction work on a new plant for the National Tube Co. at Gary, Ind.

The Electrical Supply & Machinery Co., Chicago, has been incorporated with a capital stock of \$25,000. Among the incorporators are Henry Blum and D. S. McKinlay, Chicago.

The Calumet Machine & Casting Co., Chicago, has been incorporated in Delaware with a capital stock of \$250,000 to operate a foundry and manufacture machinery. Samuel C. Rowland and Harry Lewis are the incorporators.

The Holt Mfg. Co., Peoria, Ill., maker of caterpillar tractors, has added to its holdings of land, and contemplates trebling the size of its factory to handle Government contracts aggregating \$10,000,000. New machine shops, foundry, etc., will be required. The beginning of the expansion depends more or less on the settlement of labor difficulties which now confront the company. About 900 employees have been on strike.

The Mixrite Carburetor Co., Decatur, Ill., has been incorporated with a capital stock of \$10,000 by C. H. Gillespie, E. H. Williams and A. A. Granger.

The Richardson Ball Bearing Co., Chicago, has been incorporated with a capital stock of \$75,000, by J. E. Owens, P. A. Abderon and Robert E. Turney, 111 West Washington Street, Chicago.

The United Stoker Corporation, Chicago, has been incorporated with a capital stock of \$50,000 by T. M. Pratt and others of that city.

The Moline Forging & Mfg. Co., Moline, Ill., is contemplating the erection of a one-story forge shop and office building, 110 x 264 ft., to cost \$75,000.

The Mitchell Motors Corporation, Racine, Wis., has purchased the plant of the Mitchell Wagon Co., Racine, and will use the works for the manufacture of automobile bodies and coach work. The wagon company sold its stocks, patents, etc., to Deere & Co., Moline, Ill.

Work has been started on an addition, 180 x 320 ft., to the plant of the Webster Electric Co., Racine, Wis.

The Manistee Iron Works, Manistee, Mich., is building an addition to its plant, and will add 200 employees.

The Rempis & Gallmeyer Foundry Co., Grand Rapids, Mich., will build a new plant on property recently acquired.

The Smalley General Co., Bay City, Mich., has increased its capital from \$20,000 to \$50,000, and will build a plant addition, 60 x 250 ft. This company and the Cooley Castings Co. are reported to have Government orders. The castings company is completing extensions to its plant.

The Hackett Motor Car Co. has purchased five acres in Grand Rapids, Mich., and the erection of a modern factory will be begun in the near future, according to present plans.

The Jenkins Vulcan Spring Co., St. Louis, is reported to have bought an eight-acre site at Richmond, Ind., on which a factory will be erected. The company, which is capitalized at \$300,000, makes automobile springs.

The Greenberg Iron Co., Terre Haute, Ind., is reported to have received a \$500,000 order for chainwales required for Government ships.

The Gray Tractor Co. has announced its acquisition of



land in Minneapolis, Minn., as a site for a factory in which tractors are to be built. The company at present occupies the plant of the Peteler Car Co., Minneapolis.

Williams & White, Moline, Ill., are to erect a large general forging plant at Davenport, Iowa., at a cost of about \$100,000. Contracts are about to be let for the work.

The Advance Caulking Co., Chicago, has been incorporated with a capital of \$15,000 under Delaware laws to manufacture caulking materials. S. M. Paulsen, William L. Topper and F. A. Bennett, all of Chicago, are the incorporators.

The Burnside Steel Co., Ninety-second Street, Chicago, will build a one-story addition to its foundry to cost about \$10,000.

The Monighan Foundry Co., Carroll Avenue, Chicago, has had plans prepared for a one-story addition to its foundry, about 60 x 100 ft.

The Simmons Co., Kenosha, Wis., manufacturer of brass beds, has increased its capital from \$8,000,000 to \$10,000,000.

The Winslow Mfg. Co., Kansas City, Mo., manufacturer of farm tractors, is planning for the construction of an addition to its plant. The company recently increased its capital to provide for expansion.

## Milwaukee

MILWAUKEE, AUG. 20.

The metal-working industry of Milwaukee and Wisconsin is passing through the greatest period of activity that it has ever experienced. While a large percentage of the vast bulk of work in hand is traceable directly and indirectly to the requirements for the prosecution of war, private demands are piling up in such volume that the industry cannot help but be kept fully occupied for a long time after the war requirements are filled. Industries of all kinds in the metal trades are making extensions and additions of huge volume and at no previous time, it is believed, has there been so great a demand for machine tools and many other kinds of equipment. The labor situation, which has been aggravated by the mobilization of troops and is being accentuated by the selective draft, has been relieved to some extent by the employment of women for light manufacturing operations and women are being paid practically the same wages as men, especially on piece-work. In the heavier machine-shop duties, however, it is hardly practicable to employ women and considerable complaint is heard over the shortage of male help.

The expansion of the motor truck and tractor manufacturing industry is one of the features of the situation in Wisconsin.

The Heil Co., Twenty-sixth and Montana avenues, Milwaukee, manufacturer of boilers, tanks, etc., will expend approximately \$100,000 in the construction and equipment of a new shop, 130 x 200 ft., for the accommodation of the department established some time ago for the production of electrically welded motor dump-truck bodies. The company is in the market for a 3-ton and a 5-ton crane; electric motors; 150-hp. boiler, and welding equipment. The work is in charge of Klug & Smith, consulting engineers, Mack Block. Julius P. Heil is president and general manager.

The Four Wheel Drive Automobile Co., Clintonville, Wis., which recently accepted contracts for 3750 class "B" army trucks for the Government, has broken ground for a new heat-treating room, 60 x 70 ft.; a new receiving, stock and shipping building, 100 x 120 ft., and a paint and finishing shop and warehouse, 100 x 180 ft. The present assembling shop will be converted into a machine-shop addition, and the present paint shop and storehouse will be made over as an assembling shop. All structures are of brick and steel, with sawtooth roof, and when completed will give the company an aggregate of 117,850 sq. ft. of floor space, in 16 buildings. Peter Batenberg is general superintendent.

The Oneida Motor Truck Co., Green Bay, Wis., is preparing to erect a complete new manufacturing plant on a tract of 47 acres bounded by the Fox River, State Street and the C. & N.-W. R. R. tracks, at an estimated expenditure of \$200,000. Since its organization about five months ago, the company has been occupying leased quarters in buildings of the former American Woodworking Machinery Co. at Green Bay. The main building of the new plant will be of brick, steel and concrete, 150 x 300 ft., one-story, with sawtooth roof, with a separate power plant, foundry and blacksmith shop. Work will be undertaken in time to have the plant ready by Dec. 1. Practically the entire capital of \$300,000 will be utilized in buildings, equipment, materials and labor. F. E. Burrall is president.

The Titan Truck & Tractor Co., Milwaukee, has been incorporated with a capital stock of \$100,000 to engage in the manufacture of motor trucks and tractors. At the head of the company is Joseph C. Millmann, who recently retired as

secretary-treasurer of the Stegeman Motor Car Co., truck builder, Milwaukee. An experimental shop has been in operation in one of the buildings of the Monarch Machine Works, 841-847 Thirtieth Street, Milwaukee, for five months, and the company will be ready within a few weeks' time to undertake a regular production of motor trucks in 4 and 5-ton sizes. It intends to build a plant of its own at some future date. Richard S. Boemer is associated with Mr. Millmann in the project.

The Four Wheel Tractor Co., Clintonville, Wis., organized several months ago with \$250,000 capital to manufacture tractors employing a quadruple transmission and steering system, has changed its corporate style to the Topp-Stewart Tractor Co. and increased the capital stock to \$500,000 preparatory to the erection of the first unit of its plant at Clintonville, on a 100-acre tract adjacent to the site of the plant of the Four Wheel Drive Auto Co., from which, however, it is distinct. The buildings will consist of a machine shop, power plant, smithing shop, with an aggregate of about 15,000 sq. ft. of floor space, and of brick and steel construction, one story. Until the plant is ready about Nov. 1, the tractor will be built under contract with a machine shop at Waukesha, Wis.

The William Rahr Sons Co., Manitowoc, Wis., will erect \$500,000 dairy and stock food manufacturing plant in connection with its elevators, brewing and malting plants, as soon as the Common Council orders the vacation of the stub ends of two streets. The new industry will require a considerable amount of electrical, conveyor and other equipment. It will employ between 100 and 150 operatives.

The Pelton Steel Co., Milwaukee, is erecting a new molding floor, 50 x 60 ft., to be ready Sept. 1. The company operates two Snyder electric steel furnaces of 1½-ton capacity each, which have been in use alternately. When the new floor is available, both will be operated continually, practically doubling the output.

The Hendley & Whittemore Co., Beloit, Wis., machinist, formerly the Slater, Marsden & Whittemore Co., will build a reinforced concrete, steel and brick machine-shop addition, 60 x 120 ft., costing \$25,000 with equipment, now being purchased. The work is in charge of the Newton Engineering Co., Milwaukee.

The Wehr Steel Co., Milwaukee, manufacturing steel castings by the converter process, will erect two 80 ft. bays and increase its capacity to about 450 tons of castings a month. Specifications of new equipment have not been completed. The erection work is in charge of the Northwestern Bridge & Iron Co., Milwaukee. C. F. Wehr is superintendent.

The John Obenberger Forge Co., Milwaukee, which established a large drop forge shop at Fifty-third Avenue and Burnham Street, West Allis, less than a year ago, is erecting a one-story shop addition, 80 x 100 ft., and will install considerable new equipment. The consulting engineers are Klug & Smith, Milwaukee.

The Burlington Motor Truck Co., Burlington, Wis., has been incorporated with a capital stock of \$50,000 by G. C. Rasch, George W. Waller and W. G. Rasch, to manufacture motor truck attachments for Ford chassis. A shop is now being equipped.

The Weyenberg Shoe Co., Milwaukee, will require considerable new electric motor and other equipment.

The Federal Rubber Co., Cudahy, Milwaukee County, Wis., has awarded contracts to the Leonard Construction Co., Chicago, for erecting a six-story rubber mill addition, 45 x 300 ft., and a factory addition, 56 x 133 ft., of brick and steel construction.

The Lake Geneva Motor Boat Co., Lake Geneva, Wis., has been organized by Tillford E. Stuyvesant and Arnold J. Stuyvesant, and incorporated with a capital stock of \$10,000 to manufacture power craft.

The Automatic Machine Co., Superior, Wis., has been incorporated with a capital stock of \$25,000 to engage in the manufacture of automatic machine tools and similar equipment. The incorporators are Gustaf Engelbrekt, Fritz Henderson and Erick G. Hoglund.

The D. J. Murray Mfg. Co., Wausau, Wis., builder of complete saw and planing mills, has purchased the entire sawmill machinery manufacturing equipment, patterns, patents, drawings, etc., of the Giddings & Lewis Mfg. Co., Fond du Lac, Wis., which is said to be concentrating on the manufacture of turret lathes and other machine tools. The Murray works consist of a machine-shop, 120 x 330 ft.; a foundry, 80 x 200 ft., with two cupolas, one 15-ton electric crane; two fireproof pattern buildings, 50 x 150 ft. and 30 x 60 ft., and a separate steam generating plant of 500 kw. capacity. Donald J. Murray is general manager.

The Automobile Ice Box Mfg. Co., Superior, Wis., has been incorporated with a capital stock of \$50,000 to manufacture patented refrigerating units for attachment to auto-

mobiles, motorboats, carriages, etc. The promoters are Gustaf Engelbrekt, Theodore Meronk and Nels L. Jensen.

The Federal Bridge & Structural Co., Waukesha, Wis., has accepted a contract valued at \$2,000,000, for furnishing the steel work for eighteen cargo ships to be constructed by the Kelly-Atkinson Construction Co., Chicago, for the Emergency Fleet Corporation. The contract will keep the Waukesha plant busy for at least one year's time. C. J. McIntosh is president.

## Detroit

DETROIT, Aug. 20.

Machine-tool dealers are expecting an excellent business during the coming month, because of the large orders the Government is placing in this district for munitions. Already the result of Government orders is evident in the market, two of the three large concerns making airplane motors in this district having ordered considerable equipment.

Automobile plants are operating quite heavily, and brass, copper, aluminum and grey iron concerns report excellent business. The shipbuilding companies are working to capacity, largely on Government orders. Truck companies are expecting large orders from the War Department, following the completion of test runs conducted on the Mexican border.

It is reported that Henry M. Leland and son, Wilfred, who recently withdrew from the Cadillac Motor Co., are forming a \$1,000,000 corporation to manufacture airplane motors. The Lelands recently purchased the plant of the Rands Mfg. Co. in Detroit. It is reported that the stock is oversubscribed.

A threatened strike at the Great Lakes Engineering Works, Detroit, one of the largest shipbuilding concerns in the country, was forestalled through the expelling of I. W. W. agitators, and employers generally seem to have the labor situation well in hand. High wages are being paid and skilled workmen are in great demand.

Work on the plant of the Triangle Motor Truck Co., St. Johns, Mich., was begun last week and will be rushed to completion.

The Sturgis Steel Go-Cart Co., Sturgis, Mich., which recently lost its plant by fire, and was reported to be planning to cease business, will resume operations on a larger scale than before, it has been announced. A new factory building will be erected as soon as the contracts can be let. T. R. Bradford, general manager, will continue in active charge.

The Day-Hamlin Mfg. Co., Jackson, Mich., has put on the market a tractor attachment which may be fastened to Ford automobiles. It is probable that the concern will build a large factory in Jackson.

The Zenith Carburetor Co., Detroit, Mich., is building a new four-story addition to its plant. This will increase the output 80 per cent. V. R. Heftler is president of the company.

The Crossman Stamping Co., Ypsilanti, Mich., has been incorporated and is occupying the building owned by the Ypsilanti Machine Co. George J. Crossman is president and treasurer of the company.

The Walker Universal Joint Co., Detroit, has been incorporated with a capital stock of \$350,000. George E. Walker is head of the concern.

Nelson Bros. Co., Saginaw, Mich., will shortly build an addition to its plant to manufacture the new Jumbo commercial truck.

The Canadian Steel Corp., Ltd., will soon start construction of huge docks and wharfs for landing the company's boats at the Ojibway, Ont., plant, it has been announced. This move is said to be in preparation for the actual building of the mammoth steel plant. The cost of the work on the docks will be \$250,000.

The new Grand Trunk railway shops at Port Huron, Mich., will be completed in November and will employ more than 800 men. The steel car shops now in service will not be abandoned but will be enlarged with the opening of the new plant.

The Barnes Foundry & Mfg. Co. has announced plans for the erection of a large plant on 30 acres of land which it has acquired at Ecorse, a suburb of Detroit. The company is a \$2,000,000 corporation organized in Detroit to engage in manufacturing products used in the automobile industry, making a specialty of cylinders and pistons, and turning out as well grey iron castings of all types. Claire L. Barnes is president of the company, George W. Smith, vice-president, and Charles E. Pelton, secretary and treasurer. Prominent Detroit business men and manufacturers make up the directorate. C. E. McArthur will be the company's general superintendent. He was formerly with the Western Electric Co. and International Harvester Co.

The American Cigar Banding Machine Co., Battle Creek, Mich., has been organized with a capital stock of \$10,000.

The Acacon Farm Tractor Co. has been organized, with headquarters at 429 Brooklyn Avenue, Detroit, to manufacture the Aca-Tractor, an attachment making Ford cars into farm tractors. Herbert Acacon is president of the company.

The Wood Hydraulic Hoist & Body Co., 1026 Belleview Avenue, Detroit, has prepared plans from which it will erect a one-story plant, 60 x 250 ft., to cost \$20,000. G. A. Wood is the general manager.

The Morrill & Morley Mfg. Co. and the Electric Specialties Mfg. Co., both of Benton Harbor, Mich., have combined their resources and in the future will operate under the name of the Benton Harbor Auto Machine Co. The new concern has an authorized capital stock of \$174,000. The officers of the new company are: president, J. N. Klock; vice-president, Y. N. Allen, Detroit; secretary, H. S. Gray; treasurer and manager, R. C. Easley.

The Hess Pontiac Spring & Axle Co., Pontiac, Mich., will receive bids early in the fall for the construction of two additional factory units.

The Star Motor Co. has sold its plant in Ann Arbor, Mich., to a group of local men.

The Comstock Automatic Pump Co., which has been located at Comstock, Mich., has moved its offices to Kalamazoo and changed its name to the Kalamazoo Pump Co.

The C. R. Wilson Body Co., announces that its new factory building at Bay City will be completed and manufacturing operations will be started before Sept. 1. The company is planning an addition to its Detroit metal working department to cost \$175,000.

The Atlas Electric Storage Battery Co. has been organized at Greenville, Mich., with a capital stock of \$40,000 fully subscribed. R. C. Ecker, Greenville, is secretary and treasurer of the company. A new building will be constructed to take care of the manufacture of storage batteries.

The Universal Truck Body Co., Jonesville, Mich., is enlarging its force of workmen preparatory to turning out large orders which have been received.

The Marvel Carburetor Co., Flint, Mich., has been organized to manufacture a carburetor invented by T. B. Britton of Cleveland.

The Leonard Four-Drive Tractor Co., Lansing, Mich., a new \$1,500,000 corporation, is conducting negotiations for a Lansing factory location. H. M. Leonard, formerly with the Duplex Truck Co., is organizer and president of the new concern.

The Bean Spray Pump Co., Lansing, Mich., is planning to erect a 60 x 100-ft. addition of concrete, steel and glass construction. The factory space will be devoted to enlargements of the machine and other departments.

The National Spring & Wire Co., Albion, Mich., has sold its branch plant at Windsor, Ont., to the McGregor-Banwell Co., of Ford City, Ont., manufacturer of wire fence.

Dodge Bros., Detroit, manufacturers of motor cars, will erect a seven-story brick and concrete addition to its factory.

The Michigan Copper & Brass Works, Detroit, has awarded a contract for the erection of a one-story addition to its plant.

The Diamond Power Specialty Co., Detroit, is erecting a factory building at a cost of \$70,000. R. Herman is president of the concern.

Ground has been broken for the new Triangle Truck Co., of St. Johns, Mich. The building will be ready for occupancy early in the fall.

The Muskegon Valve Co., Muskegon, Mich., a recently organized corporation, is planning the erection of a factory to manufacture plumbing specialties.

The O. J. Beaudette Co., Pontiac, Mich., manufacturer of automobile bodies, has begun work on a new plant to cost \$35,000.

The Cadillac Auto Truck Co., Cadillac, Mich., has awarded a contract to erect a new assembling building, 67 x 160 ft.

The Michigan Central Railroad is replacing its 80-lb. rails on the Saginaw branch with those weighing 100 lb. It has three large gangs of men at work. As soon as the main work is done the side tracks and yards will be improved.

The Pere Marquette Railroad has announced that car repair shops will be installed at Boardman, Mich., and the working force at the railroad yards will be increased until the shops will have a capacity of 500 cars weekly. W. L. Kellogg, superintendent of motive power, made the announcement.

The Kent-Owens Machine Co., Toledo, Ohio, is building a new four-story machine shop to cost \$75,000.

The General Electric Co., Schenectady, N. Y., is having plans prepared by Harris & Richards, architects, Fifth and Chestnut Streets, Philadelphia, for the construction of a five-story reinforced-concrete addition, about 75 x 500 ft., to its Fort Wayne works, Fort Wayne, Ind.



## Indianapolis

INDIANAPOLIS, IND., Aug. 26.

The Rodgers-Burris Mfg. Co. has been incorporated at Newcastle, Ind., with \$10,000 capital stock, to manufacture farm machinery. The directors are John W. Rodgers, E. M. Rodgers and Harry Burris.

The American High Speed Chain Co., Indianapolis, has increased its capital stock from \$100,000 to \$150,000.

The Roof Motor Specialty Co. has been incorporated at Anderson, Ind., with \$50,000 capital stock, to manufacture automobile specialties. The directors are Robert M. Roof, James A. McMyler and William N. Durbin.

Adam Beck, Huntington, Ind., is at the head of the Indiana Portland Cement Co., which will build a \$1,000,000 cement plant at Richmond, Ind. Peter Martin is vice-president; Will H. Hart, secretary, and Marshall Beck, treasurer, of the company.

## Cincinnati

CINCINNATI, Aug. 20.

Local machine tool builders are somewhat worried over having some of their best mechanics drafted into the army. Several firms are working exclusively on Government orders, or are building machines for Government munition contractors. Naturally they will be handicapped in case these men are accepted, but local manufacturers as a rule are cautious in making affidavits for the release of their mechanics, believing that the examining boards will use judgment in releasing skilled men that are urgently needed in the shops. If this policy is not carried out, however, it will curtail production to a considerable extent.

Makers of shaping machines report business as being still very good indeed with the present orders coming from die and tool concerns that are being organized in this part of the country at a very rapid rate. In Dayton, Ohio, alone within the past few weeks several new companies have been formed and others will join the ranks shortly. Small lathes can be obtained without difficulty for prompt shipment, but the demand for larger sizes holds up deliveries on these to some extent.

The Carlton Machine Tool Co., Cincinnati, lathe maker, has removed nearly all of its equipment to its new plant on Spring Grove Avenue, and expects to have it in full operation before the end of the present month.

Work has proceeded so fast on the new plant of the Champion Tool Works Co., Cincinnati, that it expects to have it in operation by Sept. 15. The new plant is at Winton Place, and the company's present quarters are in the Camp Washington district.

The Modern Foundry Co., Oakley, Cincinnati, has commenced work on a large foundry addition, estimated to cost \$35,000.

Construction work on the new plant of the Steel Forging Co., in Oakley, is now well under way. The company has temporary headquarters at 401 Bell Block, Cincinnati.

The Interstate Folding Box Co., Middletown, Ohio, has increased its capital stock from \$10,000 to \$75,000 and intends moving its factory to larger quarters. Only special equipment will be required.

The Dayton-Wright Aeroplane Co., Dayton, Ohio, has increased its capital stock from \$500,000 to \$1,000,000. The company intends to use the three-story plant at Miamisburg, mentioned as recently acquired, for the manufacture of airplane propellers and wire parts.

Further particulars from the Reliance Tool & Mfg. Co., Dayton, Ohio, give the location of a new plant at 818 East Monument Avenue, and in addition to tools, dies, jigs, etc., special machinery will be manufactured. The officers are: President, J. J. Schneider; vice-president, J. F. Schneider; secretary and treasurer, C. F. Swissegabel, and general manager, P. D. Waugh.

The Ohmer Fare Register Co., Dayton, Ohio, is making an addition to its plant, estimated to cost \$35,000.

The new plant of the Dayton Body Co., Dayton, Ohio, is nearly ready for occupancy and installation of the necessary equipment will be commenced early in September.

The Dayton Metal Products Co., Dayton, Ohio, is making a still further addition to its Taylor Street plant that will be used for manufacturing and garage purposes.

A fire last week destroyed the test room, carpenter shop, pattern and hardening departments of the Reliable Engine Co., Portsmouth, Ohio, entailing a loss of \$25,000. Rebuilding operations are already under way, and as the main plant of the company was not damaged, no appreciable delays will be experienced.

The daily press reports that the Government contemplates

establishing a large repair shop for river boats at Marietta, Ohio.

The Columbus Lathe & Engineering Co., Columbus, Ohio, has been incorporated with \$150,000 capital stock by Robert L. McCabe, J. W. Anderson and others. Manufacturing plans are not yet available.

The Standard Register Co., Dayton, Ohio, will make an addition to its plant on Albany Street that will be 60 x 200 ft., one story and of reinforced concrete construction.

## The Central South

LOUISVILLE, KY., Aug. 20.

Government contracts continue to engage the attention of several of the largest concerns in this field.

The Louisville Industrial Foundation announces that negotiations looking toward location of a malleable iron foundry here are nearing a successful conclusion.

The Roy C. Whayne Supply Co., Louisville Ky., is in the market for an electric hoist, two or three drum, with swinger; 25 to 50-hp., 440-volt, 3-phase, 60-cycle.

Fire destroyed the power house of the Atlas Mining Co., Capito, Ky., with a loss of \$7,500. The equipment includes air and electrical machinery and will be replaced at once.

M. B. Parker, Chattanooga, Tenn., is in the market for a 10-in. suction, 8-in. discharge, duplex compound steam pump, second-hand; and a locomotive crane with a capacity of from 12 to 20 tons.

The John G. Duncan Co., Knoxville, Tenn., is asking for prices on the following: One 25-hp. locomotive boiler on wheels; two jack hammer drills; four sets of steels for jack hammers, with three sets of hose and couplings for the same; 300 ft. of 1¼-in. pipe; one single surfacer planer and matcher, to plane and match in not less than 12 x 3-in. lumber; 600 ft. of second-hand ½-in. steel rope, 1000 ft. of 12-in. steel rope, second-hand; sheave wheels for 6/8 x ¾-in. rope; three dozen clamps for wire rope ¾-in. and ½-in.; one double-drum hoisting engine and derrick, with concrete bucket; two 3¼-in. steam drills with tripod and hose for same, for 10-ft. hose.

## Birmingham

BIRMINGHAM, ALA., Aug. 20.

Cotton ginning machinery is moving in quantities from two Birmingham plants. Structural operations have increased demand for machine tools. Hydro-electric apparatus is continuously active.

Harrison Bros., Mobile, will build a plant for construction and repair of ships, especially fishing schooners.

Horace Turner, president of Turner Terminal Co., will establish shipyards at Mobile.

The Alabama Drydock and Shipbuilding Co., Mobile, has purchased land for another shipbuilding plant to be connected with its present one.

The Gulf, Mobile & Northern Railway, W. F. Owen, president, announces plans for immediate expenditure of \$1,000,000 on piers and warehouses at Mobile.

The Brewton Iron Works, Brewton, Ala., capital stock \$10,000. Incorporated by W. F. Wilson, W. Y. Lovelace, A. V. Lovelace and others.

The Southern Welding and Reclaiming Co., Birmingham, capital stock \$2,500, has been incorporated by E. H. Ross, E. B. Bryant and others.

The proposed new shipbuilding plant of the Kelly-Atkinson Construction Co., 189 West Madison Street, Chicago, to be erected near Mobile, Ala., will consist of machine shops, blacksmith shop, erecting plant, power house, office buildings and other structures. W. L. Kelly is president.

## Texas

AUSTIN, Aug. 18.

The machinery and tool trade of Texas and the Southwest is beginning to show an improvement over what it has been for the last two or three weeks. Crop conditions on the whole are better than they were a week ago due to scattered rains that have been of particular benefit to cotton.

The Swift Oil & Sulphur Co., which has been incorporated at Houston with a capital stock of \$250,000, will build an oil and sulphur refining plant. O. A. Swift of Houston is a stockholder.

The Dallas Southwestern Traction Co. has awarded the contract for the construction of 49 miles of its proposed interurban electric line between Dallas and Cleburne to the Cherokee Construction Co., Sapulpa, Okla. The contract calls for an expenditure of \$2,500,000. The survey was made some time ago and the right of way has all been obtained. The

route of this first division of the road is through Eagle Ford, Irving and other towns.

The Loomis Wheel & Body Works Co. has been incorporated at Dallas for the purpose of manufacturing wheels and bodies for vehicles. A. L. Loomis is a stockholder.

G. M. Stone of Quincy, Ill., and associates have purchased a site at Texarkana upon which they will construct a plant for the manufacture of farm tractors, motor trucks and various kinds of farm machinery. An initial unit of the plant will cost about \$100,000.

H. M. Gray and associates are promoting the construction of an interurban electric line to run between Las Cruces, N. M., and El Paso, Texas, through the valley of the Rio Grande. The proposed road will be about 30 miles long.

## California

LOS ANGELES, Aug. 14.

The United States Auto Spring Co., 1120 South Los Angeles Street, Los Angeles, has completed arrangements for the erection of a new one-story shop building, about 50 x 140 ft., at its plant. The company specializes in the production of springs for automobiles and motor trucks, and the extension will be used for increased capacity.

The A. J. Savage Munitions Co., San Diego, Cal., has filed articles of incorporation with a capital of \$1,000,000 to manufacture firearms of different kinds. The company will be operated by officials of the Savage Tire Co., and plans for the erection of a large plant to cost, for initial operations, about \$225,000. A. J. and Arthur W. Savage, Horton L. Titus, Charles W. Oesting and Ernest George are the incorporators.

The Hobbs Storage Battery Co., Los Angeles, recently incorporated, is arranging for the immediate installation of machinery at its new plant to be located at 1231-35 South Olive Street. The company will specialize in the production of a special storage battery, particularly for motor car service. H. V. Andrews heads the company.

The Southern Sierras Power Co., Riverside, Cal., is planning for the construction of a new electric power plant at Blythe, to furnish service in the Imperial Valley section.

The Typhoon Pump Works, Los Angeles, has filed notice of organization to operate a plant on Cudahy Avenue, near Florence Street. Morden K. Turner, 231 East Seventh Street, Long Beach, heads the company.

The Public Service Commission has granted the city Power Department, Los Angeles, permission to build its proposed power plant No. 2, in the San Francisquito Canyon, for municipal light and power service, expending funds at the rate of \$10,000 per month for construction and equipment. The electric station is estimated to cost \$125,000.

The Board of School Trustees, Orange, Cal., is planning for the construction of a machine shop addition to the Orange Union High School, to be equipped for instruction in machine and kindred work.

The Union Iron Works, San Francisco, has commenced the construction of a new machine shop at Oakland. It is said that the structure with equipment will cost about \$400,000.

The Union Ice Co., Pine Street, San Francisco, is having plans prepared for a new one-story ice-manufacturing and cold storage plant to be erected at Stockton. The structure will be about 200 x 300 ft., and is estimated to cost \$100,000, of which about \$40,000 will be expended for machinery and equipment.

## San Francisco

SAN FRANCISCO, Aug. 14.

There is a large and increasing demand for heavy tools and machinery and local supply houses are experiencing considerable difficulty in getting orders filled. Many industrial corporations are enlarging plants and increasing capacity. The commandeering of vessels now building at California ports as well as of some of the larger shipbuilding plants is expected to lead to a number of changes and additions.

The Union Iron Works in this city has under construction 26 vessels, practically all of which are of steel over the 2500-ton dead weight limit. Eleven are tankers and seven are 12,000-ton vessels for the Cunard Steamship Co. The Moore & Scott yards in Oakland have 18 steel steamers under construction, of which, however, 10 are for the Federal Shipping Board. The Hanlon Drydock & Shipbuilding Co., Vallejo, has two vessels of 5500-tons under way, and three large wooden vessels are building at Benicia. Outside of San Francisco harbor, the Rolph yards at Eureka are building three wooden steamers and two barkentines; the Hammond yards at the same place are building for wooden steamers, and the yards at San Pedro and Long Beach have under way six wooden and eight steel steamers. It is reported

here that, following the taking over of the plant and yards of the Union Iron Works at this place extensive shipbuilding yards will be put in at Hunter's Point at an approximate cost of \$5,000,000.

The Holt Mfg. Co., Stockton, Cal., is making additions to its harvester assembling plant at a cost of \$25,000. The company is also constructing a coke and pig iron storage platform to be on the same level as the charging platform for the cupolas. Mechanical conveyors will raise the coke and pig iron to their respective bins.

The Schaw-Batcher Co., San Francisco, which operates a large and well equipped plate shop in South San Francisco, will at once equip a plant for the making of steel cargo steamers. Three ways are to be put in at once to care for contracts for the Emergency Fleet Corporation. Dredging and other preliminary work is already under way.

The Adams Implement & Engine Co., San Francisco, has been incorporated with a capital stock of \$10,000 by W. F. Adams, N. Bertunelli and G. Donnelly.

The Ewa Plantation Co., Honolulu, T. H., has authorized the purchase of electrical and pumping equipment to cost between \$40,000 and \$50,000. A 750-kw. steam turbine, centrifugal pump, motors, etc., are included.

The Olowalu Co., Honolulu, T. H., will enlarge its sugar plant by the addition of a 12-roller mill and additional boilers at a cost of about \$80,000.

The Union Lumber Co., Fort Bragg, Cal., will put in a 750-kw. generator set at a cost of \$35,000 and will add six machines with a daily capacity of 50,000 ft. of lumber to the planing mill now in course of construction. An electric crane with a clearance of 40 ft. and running a distance of 1600 ft. is being installed.

The Wilmington Shipbuilding Co., Los Angeles, Cal., has secured 600 ft. of frontage on East Wilmington Basin on which a plant will be erected at a cost of \$100,000, of which approximately \$60,000 will be spent for machinery.

The Fulton Shipbuilding Co., Los Angeles, recently incorporated, has now taken over the plants of C. E. Fulton and of the C. H. Sharp Mfg. Co. Permits have been secured for the erection of a work shop, battery charging station and other structures.

The Swift Tack & Nail Co., San Francisco, has been incorporated with a capital stock of \$60,000 by F. G. Phillips, H. A. Swift and C. W. Kelly. The company will erect a tack and nail manufacturing plant at Richmond on San Francisco Bay, to be completed about Jan. 1.

The Orange Union High School, Orange, Cal., has called for bids for the erection of a machine shop on the High School grounds.

W. A. Boole, Benicia, Cal., has bought the James Robertson shipyards at that place and has leased 50 acres of water front land across Carquinez Straits from Benicia on which a shipbuilding plant for making wooden ships will be erected.

The Hanlon Dry Dock & Warehouse Co., Oakland, Cal., will erect an additional machine shop at a cost of \$2,250.

The Union Ice Co., San Francisco, will expend about \$40,000 for machinery and equipment for an ice manufacturing and cold storage plant to be erected at Stockton, Cal.

The Pacific Gas & Electric Co., San Francisco, will install new gas making machinery at Oroville, Cal., at a cost of \$15,000 and will make additions to its electrical equipment at that place at a cost of \$25,000.

The Hammond Lumber Co., San Francisco, will add to its plant at Eureka, Cal., a complete mill for sawing heavy ship timbers. The equipment will include a special band saw outfit and extra long carriages and cranes for handling materials.

## The Pacific Northwest

SEATTLE, WASH., Aug. 13.

All efforts to end the strike of the lumbermen in the Northwest have proved failures, and the majority of the camps and mills in this section are still shutdown. A few of the plants have agreed to the demands of the workers, but the majority of the mills, including the larger plants, are idle. Mill owners assert that the settlement of the strike will be brought about soon, and have pledged themselves to furnish the Government with 300,000,000 to 400,000,000 ft. of spruce, if such an amount is needed. If the Government requires the spruce, the mills will be operated to capacity, and a greater percentage of usable timber will be cut from each log.

The sheet metal problem is affecting all lines of industry at present. Supply houses on the coast are having a hard time supplying the demand. Many plants are running overtime. There are more than fifty such plants in Seattle all operating and doing a large business. The shipyards in the city are taking a large portion of the products.



The car shortage problem has again come up in Oregon, where the situation is so serious that circulars have been sent out by the Public Service Commission, asking the co-operation of shippers in meeting the demands for cars.

Shipbuilding operations in three plants in Portland, involving twenty-nine steel ships, building or under contract, have been taken over by the Government to date. Wooden ships are not yet affected.

The Columbia River Shipbuilding Co., Portland, Ore., is establishing a marine boiler shop as an adjunct to its shipbuilding plant. The construction of boilers has been started, but installations of machinery is not complete. Several new machines will be needed, and a 50 ft. extension added to the shop building. The company will build and equip complete the 8800-ton steel steamers under construction at the plant. The plan will employ 2300 men.

The Northport Mfg. Co., Northport, Wash., will be placed in operation this month and will manufacture a saw invented by A. R. Brewer, president of the concern.

The Standard Boiler Works, Seattle, Wash., has purchased a new site on which will be erected a new plant.

It is reported that a syndicate is negotiating for the purchase of the property of the Dominion Drydock & Shipbuilding Co. in North Vancouver, B. C.

The Pacific Coast Railroad Co., Seattle, has completed plans for a pattern shop to cost \$3,500.

The Markey-Campbell Machinery Co., Seattle, will construct a frame machine shop, 65 x 100 ft., 1½ story, to cost \$6,000.

The Willamette Iron & Steel Works, Portland, will erect a three-story building of brick, 56 x 31 ft.

Plans have been completed for the plant of the Allen Shipbuilding Co., to be built on Salmen Bay, and work will be started in the near future. Work will include two-story machine shop, 56 x 250 ft., beside other buildings and six shipways. Cost of the plant will be \$150,000.

The plant of the Todd Drydock & Construction Co., Tacoma, Wash., is well under way. The four main working structures, the drydock, machine shop and office buildings, the iron works and the power house, are almost completed.

The Tacoma Shipbuilding Co., Tacoma, Wash., will install machinery immediately for the construction of wooden vessels. Plant is nearing completion and will handle Government contracts.

The Moran Engineering Co., Seattle, report an increase of more than 60 per cent in the demand for its output of Moran centrifugal pumps.

The Portland Shipbuilding Co., Portland, Ore., has contracts for rebuilding the steamer Elmore for the Willamette Navigation Co.

## Canada

TORONTO, ONT., AUG. 18.

The Pere Marquette Railway has awarded contracts for the construction of a large reservoir at Blenheim, Ont. The company will also install a pumping station and equipment, also a large tank.

The Galt, Ont., Hydro Commission decided to increase its voltage from 6600 to 13,200 volts. Considerable new equipment will be installed, for which Superintendent Elliott will receive prices.

The Fruit Machinery Co., Ingersoll, Ont., will build an addition and make alterations to a building at Belleville, Ont., to be used as a foundry. F. B. Foley is manager.

The Canada Copper Co., owner of the British Columbia Copper Co., plans the erection of a concentrating mill of 3000 daily capacity at Copper Mountain, B. C. The improvements include hydro-electric power installation and a 12-mile railway spur from Princeton, B. C., to Copper Mountain, B. C., at a cost of \$2,000,000. Oscar Lachmund is general manager.

The Dartmouth (N. S.) Board of Trade and Town Council is carrying on negotiations for the establishing of a steel shipbuilding plant and dry dock at Dartmouth.

A building permit has been issued to the Quebec Harbor Commission for extensions and additions to the grain elevator on the Louise Embankment, Quebec, Que., to cost \$375,000.

The International Paper Co. has purchased a site from the Lake Superior Corporation at Sault Ste. Marie, Ont., on which it will build a large paper pulp plant.

The Dominion Rubber Co., St. Gerome, Que., has awarded the contract for the erection of a \$45,000 addition to its plant to Charles Jouvett, 112 St. Therese Street.

The St. John Shipbuilding Co., St. John, N. B., will start

work at once on the erection of a large shipbuilding plant, which will at first be used for turning out wooden ships and will later be equipped for building steel boats of all kinds. Mr. Norcross of the Canada Steamship Lines is interested in the company.

The British America Nickel Corporation, Ltd., Royal Bank Building, Toronto, Ont., will build a smelter and nickel refinery at Sudbury, Ont., to cost \$6,000,000.

L. H. Bacque, care Hotel Dufresne, Three Rivers, Que., will build a plant for the manufacture of pressed lime cement brick at Three Rivers to cost \$100,000. The company will be known as the Three Rivers Sand-Lime Brick Co. Mr. Bacque is asking for quotations on electric motors, belting, etc. Contracts will also be let for the erection of three buildings. Henry W. Terry, 31 Rosborough Street, West, Toronto, Ont., is consulting engineer.

The Muskoka Wood Mfg. Co., Ltd., Huntsville, Ont., is in the market for a 20 or 25 kw., d.c. generator.

Roger Miller & Sons, Ltd., Lumsden Building, Toronto, Ont., has been awarded the contract and started work on the erection of a reinforced concrete and steel forge and machine shop for the British Forgings, Ltd., Royal Bank Building, Toronto, to cost \$70,000.

The Thor Iron Works, Toronto, Ont., has been notified by the Toronto Harbor Commission that it will be required to vacate its property within the next few months so that dredging can be completed in connection with the construction of a dock. It is the intention of the company, which has a number of contracts on hand for building steel ships, to build a new plant in the Ashbridge's Bay industrial district, Toronto.

The British Columbia Sugar Refinery, Vancouver, B. C., has taken out a permit for the erection of an addition to its boiler house to cost \$9,000.

The Cotton Co., Ltd., Vancouver, B. C., plans the erection of a shipbuilding plant at False Creek, to cost \$100,000.

The Pacific Metal & Galvanizing Co., Seattle, Wash., proposes to establish a plant at Vancouver, B. C., to cost \$35,000. Henry Gray is secretary.

James Whalen, president of the Port Arthur Shipbuilding Co., Port Arthur, Ont., announces that his company has just secured additional contracts amounting to \$2,000,000 for the construction of ships.

In the three principal shipbuilding plants in Vancouver, B. C., there are \$20,000,000 worth of steel and wooden ships under construction, including two for the British Government, four for Norway and seven wooden vessels for the transportation of lumber.

Bids are being received by J. C. Hartley, clerk, of Woodstock, N. B., for the erection of a filtration plant and pumping station to cost \$65,000.

The National Potash Co., Ltd., 257 Confederation Life Building, Toronto, Ont., will spend \$15,000 on frame buildings and about \$150,000 on technical machinery.

The Canadian Hession Tiller & Tractors, Ltd., Hamilton, Ont., proposes to build a factory to cost \$65,000.

The Maple Leaf Harvest Tool Co. has secured a site on Tillson Avenue, Tillsonburg, Ont., and will build a plant there at a cost of \$50,000.

The Elmira Transmission Co., Elmira, Ont., has let the contract to the Elmira Planing Mill Co. for the erection of an addition to its foundry.

Willys-Overland, Ltd., Weston Road, Toronto, Ont., has awarded the contract for the erection of a one-story, reinforced concrete machine shop to cost \$17,500.

The Maxwell Motor Co., Detroit, has awarded contracts in connection with the erection of a reinforced concrete factory at Windsor, Ont., to cost \$140,000.

The S & F Motors Corporation, Ltd., Montreal, Que., has been incorporated with a capital stock of \$46,000 by Arthur Sansoucy of Troy, N. Y., Mitchel Trend of Montreal, Que., Alexander N. Dufresne of St. Cesaire, Que., and others to manufacture automobiles, aeroplanes, motors, engines, etc.

The Dominion Molybdenite Co., Ltd., Ottawa, Ont., has been incorporated with a capital stock of \$5,000,000 by Stanley G. Metcalfe, Charles Murphy, Arthur C. Craig and others to smelt, refine and treat minerals, etc.

The Pacific Mining & Mfg. Co., Ltd., 569 Hornby St., Vancouver, B. C., has been incorporated with a capital of \$1,000,000 by Angus A. Crowston, William S. McClure, Reuben Tiffin and others to manufacture metals, machinery, etc.

The Montreal Machine Shop, Ltd., Montreal, Que., has been incorporated with a capital stock of \$100,000 by George Mayrand, Hector Hardy, Dudger Grulbault and others of Montreal to operate machine shops, foundry, to manufacture metals, iron, steel, tools, machinery, etc.

The Quebec Charcoal Co., Ltd., Montreal, Que., has been incorporated with a capital stock of \$50,000 by Arnold Wainwright, Charles G. Ogden, George V. Cousins and others to manufacture charcoal, wood products, etc.

T. R. McMackon, Shedden, Ont., is in the market for a drag sawing machine.

The Western Salt Co., Ltd., Courtright, Ont., is in the market for a high pressure pump, size about 14 x 7 x 12, for 300 lb. pressure.

## Government Purchases

WASHINGTON, Aug. 20.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, opening date unassigned, schedule 1417, for 14 geared-crane lathes; schedule 1418, for one roll-over molding machine, all for Philadelphia; schedule 1423, for 12 engine lathes for Norfolk, Va.

Bids will be received by the light house inspector, Post-office Building, Detroit, until Aug. 27, for two oil engine-driven air compressors for Sand Hills Light and Fog Signal Station.

Bids will be received by the commandant, Navy Department, Mare Island, Cal., until Aug. 28, for electric-traveling cranes for extensions to machine shop, Mare Island.

The following bids were received by the chief clerk, Department of Commerce, Washington, for furnishing one milling machine:

Brown & Sharpe Mfg. Co., Providence, R. I., \$1,809; 160 days.

Kemp Machinery Co., Baltimore, Md., \$1,570; 120 days.

E. A. Kinsey Co., Cincinnati, bid on attachments only.

Carney Machinery & Supply Co., Baltimore, Md., \$1,360.66; 90 days.

Bids were received at the Bureau of Supplies and Accounts, Navy Department, Washington, for furnishing material and supplies for the naval service as follows:

Schedule 1344. Steam Engineering. Class 14, Philadelphia—one bevel gear planer—Bid 13, \$3,914; 56, alternate, \$3,113, \$3,217, \$3,197 and \$3,124.

Schedule 1378. Ordnance. Class 22. South Charleston, W. Va.—five motor-driven lathes—Bid 23, \$1,450 and \$1,545;

27, \$2,552.50; 42, \$3,918.51, \$1,513.53, \$1,720; 56, \$2,490.

Class 24—five engine lathes—Bid 2, \$4,953 and \$4,885; 29,

\$3,950; 42, \$6,120; 56, \$4,615. Class 24—electrically driven

planing machine—Bid 2, \$9,932; 23, \$10,470 and \$10,570; 29,

\$10,240; 41, \$11,350; 42, \$16,310; 55, \$9,413; 56, \$11,877.50

and \$11,595. Class 25—motor-driven boring and turning

mill—Bid 23, \$13,360 and \$13,370. Class 26—universal

shaping machines—Bid 23, \$1,595 and \$1,805; 28, \$1,248;

29, \$1,920; 34, \$1,298; 42, \$1,313. Class 27—two vertical

shapers—Bid 25, \$1,627; 36, \$1,501. Class 28—universal

milling machines—Bid 2, \$2,894.50; 11, \$2,696; 23, \$3,220 and

\$3,335; 54, \$2,382. Class 29—motor-driven milling machines

—Bid 23, \$4,885 and \$4,930; 56, \$5,072.70. Class 30—motor-

driven drill press—Bid 2, \$683 and \$610; 11, \$697; 14, \$855;

23, \$725 and \$835; 28, \$642 and \$627; 40, \$690; 42, \$825;

53, \$628 and \$592; 55, \$619; 56, \$681.50. Class 31—uni-

versal radial drill—Bid 2, \$5,067 and \$5,050; 11, \$4,975; 23,

\$5,260 and \$5,385; 29, \$3,831; 56, \$4,870. Class 32—uni-

versal tool and cutter grinders—Bid 2, \$930; 22, \$658.61; 23,

\$975; 42, \$2,140; 56, \$1,931.60. Class 33—one self-con-

tained grinding machine—Bid 21, \$7,480; 23, \$8,305 and

\$8,435.

Schedule 1387. Ordnance. Class 51. South Charleston,

W. Va.—one surface-grinding machine—Bid 23, \$6,390 and

\$6,492; 56, \$5,039.

Schedule 1385. Steam Engineering. Class 61. Philadel-

phia—two motor-driven milling machines—Bid 44, \$3,510;

47, \$2,959; 56, \$3,020.98; alternate, \$3,425.98; alternate,

\$3,397.60. Class 62. Philadelphia—two turret-screw ma-

chines—Bid 11, \$1,510; 44, \$1,556; 49, \$1,185.50; 55, \$2,245;

56, \$1,147.

Schedule 1389. Steam Engineering. Class 63. Boston—

vertical boring and turning mill—Bid 29, \$12,409; 35, \$14,355;

38, \$12,000.

The names of the bidders and the numbers under which they are designated in the above list are as follows: Bid 2, Brown & Zortman Machinery Co., 2535 Liberty Avenue, Pittsburgh; 11, The Fairbanks Co., 416 Broome Street, New York; 13, Gleason Works, 1000 University Avenue, Rochester, N. Y.; 14, Hoefer Mfg. Co., Freeport, Ill.; 21, Landis Tool Co., Waynesboro, Pa.; 22, McDonough Mfg. Co., Eau Claire, Wis.; 23, The Motch & Merryweather Machinery Co., 711 Lakeside Avenue, northwest, Cleveland; 25, Newton Machine Tool Works (Inc.), Twenty-third and Vine streets, Philadelphia; 27, the National Lathe Co., 11 West Second Street, Cincinnati; 28, D. Nast Machinery Co., Bourse Building, Philadelphia; 29, Niles-Bement-Pond Co., 111 Broadway, New York; 34, Potter & Johnston Machine Co., Pawtucket, R. I.; 35, Henry Prentiss & Co. (Inc.), 149 Broadway, New York; 36, Pratt & Whitney Co., Hartford, Conn.; 38, Standard Roller Bearing Co., 8001 Lancaster Avenue, Philadelphia; 39, B. F. Sturtevant Co., Hyde Park, Mass.; 40, the Sipp Machine Co., Keen and Warren streets, Paterson, N. J.; 41, William Sellers & Co. (Inc.), 1600 Hamilton Avenue, Philadelphia; 42, Sherritt & Stoer Co. (Inc.), 603 Finance Building, Philadelphia; 44, W. E. Shipley Machinery Co., Morris Building, Philadelphia; 47, Vandyck-Churchill Co., Room 529 Singer Building, Liberty Street, New York; 49, Warner & Swasey, Cleveland; 51, Ward & Co., Washington; 53, the Kemp Machinery Co., 223 North Calvert Street, Baltimore; 54, Brown & Sharpe Mfg. Co., Providence; 55, Swind Machinery Co., 1110 Widener Building, Philadelphia; 56, Manning, Maxwell & Moore, New York.

The National Shear Co., Westmoreland and Hurley Streets, Philadelphia, has discontinued the manufacture of scissors and shears. As a result, the name of the company has been changed to the Quaker Tool Co. and in the future mechanics' tools only will be made. No changes have been made in the management of the company.

## NEW TRADE PUBLICATIONS

**Automatic Screw Driving Machines.**—Reynolds Pattern & Machine Co., 101 Third Avenue, Moline, Ill. Pamphlet. Contains illustrations and brief descriptions of a line of automatic machines for driving screws. The advantages of a reduced cost of assembly, increased output and simple operation are briefly touched upon, followed by a general description of the machines. In connection with the illustrations of the various machines which are built either with or without a boring attachment in a number of different styles the distinguishing features of each type are briefly touched upon, together with concise statements of the work for which they are especially adapted.

**Storage Battery Trucks.**—Edison Storage Battery Co., Orange, N. J. Bulletin No. 600. Describes and illustrates the part that is being played by storage battery trucks in industrial transportation. After a brief discussion of the advantages of the company's battery, which has nothing about it to break or crack, the remainder of the bulletin is given over to illustrations of the trucks in use for handling a great variety of material, one showing a heavy steel girder, 64 ft. long and weighing 20,000 lb., being pushed by an electric tractor. A brief description of the construction of the battery and a table of specifications and dimensions are included.

**Small Tools.**—Cleveland Twist Drill Co., East Forty-ninth Street and Lakeside Avenue, Cleveland. Catalog No. 39. This is the company's 1917 catalog illustrating and describing a line of small tools which includes drills, reamers, sockets, counterbores, mills, screw extractors, arbors, mandrels, etc. The catalog is divided into 10 sections, each devoted to some particular line of tools and a thumb index enables the user to locate easily the special subdivision desired. Each section is prefaced with a detailed index referring to the particular page in the section on which each tool is described. An illustration showing some stage in the manufacture of the tools or some unusual sales point in one of them is given on this sub-index page. The whole catalog is prefaced by a classified index arranged alphabetically by the various tools and another of list numbers with the code word and the page in the catalog on which the description appears. Suggestions for ordering various tools, a number of tables of useful information and a complete telegraph code are included.

**Turret Lathes.**—International Machine Tool Co., Indianapolis. Catalog. Lists the various features of the Libby turret lathes, which include single pulley drive, the use of a side carriage to permit the full swing of the work, independent carriage feeds, ample power and rigid construction. Following this condensed data tables are given. A general description of the lathe, which is built in three sizes with swings ranging from 16 to 26 in., is presented, the text being supplemented by numerous illustrations. The various tools and accessories employed with the lathes are illustrated and briefly described and floor and countershaft plans are included.

**Storage Battery Lift Trucks.**—Wright-Hibbard Industrial Electric Truck Co., 42 Parkridge Avenue, Buffalo. Folder. Calls attention to a storage battery elevating truck of all steel construction for use in industrial plants. The truck is driven and elevated by one motor through a special gear arrangement. Several views of the truck in use are presented and the results of a test made of a 3 per cent grade with an empty truck and a load of 4000 lb. are included.

**Structural and Plate Workers' Tools.**—Cleveland Steel Tool Co., Cleveland. Catalog No. 7. Describes and illustrates a line of structural and plate workers' tools which includes punches, dies, chisels, coupling nuts and rivet sets and tools. Drawings of the various tools with the principal dimensions marked are included, and in a number of cases tables giving the different sizes that can be supplied are presented.

**Taps and Dies.**—J. M. Carpenter Tap & Die Co., Pawtucket, R. I. Catalog No. 22. Supersedes all previous editions and illustrates an extensive line of taps and dies for all classes of work. In general a separate page is given to each tool with an engraving at the top and a table of the sizes that can be furnished below. In a number of cases brief descriptions are included. Several tables of useful information complete the catalog.

**Lock Nuts.**—Roller Lock Nut Co., Inc., 61 Broadway, New York. Pamphlet. Calls attention to a special type of lock nut in which a roller is used to perform the locking. Among the advantages claimed for the nut, which was illustrated in THE IRON AGE, March 8, 1917, are simplicity of construction, reduced labor expense for installation and maintenance and



the absence of lost or loose nuts to be replaced. Views showing the way in which the roller lock acts are included.

**Leather Belting.**—Charles A. Schieren Co., Cliff and Ferry streets, New York. Pamphlet entitled "Belt Buyers' Guide." Pertains to the transmission of power by leather belting and the maintenance of the belts in a plant. After a brief discussion of the problem of transmitting power by belting, the service which the company is prepared to render users of its belting is briefly touched upon. This is followed by instructions on the lacing of belting and the precautions to be observed in installing and using the belts. Considerable useful information is presented and tables showing the horsepower transmitted by various widths of single and double leather belts at different speeds are included.

**Automatic Fire Detector.**—New York Brass Foundry Co., 102 Centre Street, New York. Pamphlet. Lists the advantages of the Monitor detector system for calling attention to changes in temperature, opening exit doors, controlling automatic sprinklers and closing fire doors and shutters, etc. A number of applications of the detector are illustrated and briefly described.

**Tongueless Industrial Truck.**—Columbus Lift-Truck Co., 105 West Broad Street, Columbus, Ohio. Folder. Refers to an elevating industrial truck of the tongueless type, in which the load carrying platform is raised from the floor by a ratchet. Several views of the truck are presented, and a condensed table of specifications is included.

**Pattern Shop Equipment.**—Wellman Pattern Supply Co., Cleveland. Bulletin No. 8. Lists and illustrates various appliances for use in a pattern shop. These include a line of heavy duty universal side spindle Duntley drills, which use either single-phase alternating or direct current, a stand for electric drilling machines, portable electric disk and hack saw blade grinding machines, glue pots, bench planing machines, power grindstones, embossing presses, band saws, vises, pattern lumber and special screw machine products.

**Roller Bearings.**—Hyatt Roller Bearing Co., Newark, N. J. Engineering bulletin No. 1809. Devoted to the use of roller bearings in steel mills. Among the applications are rolling tables, hot saws, soaking pit covers and charging, ingot, ladle, cinder and slag cars. The special advantages of reduction in friction, good lubrication and durability are briefly touched upon. A number of diagrams showing the way in which the bearings are installed are presented, together with a table of dimensions and specifications.

**Turret Lathes.**—Gisholt Machine Co., Madison, Wis. Pamphlet. Devoted to the company's turret lathe and the rapidity of production possible with it. The pamphlet consists of reprints of advertisements in the trade and technical press. In each case some part that was finished by the lathe is shown and the time required for its production emphasized. Brief descriptions of the different parts and sectional drawings serve to supplement the halftone illustrations.

**Air Compressors.**—Nagle Corliss Engine Works, Erie, Pa. Bulletin No. 27. Calls attention to a line of belt and steam driven power air compressors which are built in sizes ranging from 3 to 8000 cu. ft. of air. A general description of the construction of the compressors, which is supplemented by illustrations of the different parts, is presented and this is followed by specification tables of the various sizes of compressor that can be supplied. Mention is also made of a line of air receivers and views of the different types of air compressors built are included.

**Ball Bearings.**—S.K.F. Ball Bearing Co., Hartford, Conn. Folder. Gives the opinions of a number of prominent machine tool builders concerning the use of the company's ball bearings in different kinds of machine tools.

**Laboratory and Workshop Appliances.**—Buffalo Dental Mfg. Co., Buffalo. Catalog B, List No. 37. Mentions a line of appliances burning gas, gasoline and kerosene for chemists, experimental laboratories, workshops, toolrooms, colleges, schools, etc. The line includes crucible and muffle furnaces, tool forges, brazing stands, blowpipes, foot and power blowers, burners, etc., and the various accessories used in connection with them. Illustrations and brief descriptions are presented and in some cases tables of the different sizes that can be supplied are included.

**Rivet Cutting Gun.**—Rivet Cutting Gun Co., 220 East Second Street, Cincinnati. Pamphlet. Points out the advantages of cutting rivets with a patented pneumatic tool instead of the cutting bar and sledge. Among the features upon which emphasis is laid are a reduction in cost and safety. A number of views of the gun in use are presented and its application to each particular case is briefly described. An illustrated description of the tool appeared in THE IRON AGE, March 15, 1917.

**Machinists' Tools.**—Slocum, Avram & Slocum Laboratories, Inc., 531 West Twenty-first Street, New York. Two

folders. Illustrate and describe an improved form of sine bar and an indicating square for tool makers and machinists. Applications of both tools are shown and a list of the other tools made is included.

**Motor Reversing Oil Switch.**—Crocker-Wheeler Co., Ampere, N. J. Bulletin No. 179. Describes an oil switch that has been developed for reversing two or three phase alternating current motors. In the bulletin the operation of the switch is demonstrated by illustrations rather than by text. These show the different arrangements of operating levers that can be provided, as well as the positions of the contacts for operation in either forward or reverse directions. The various features of the switch, such as simple and rugged construction, easy access and the use of few parts, are briefly touched upon. An illustrated description of this switch appeared in THE IRON AGE, Aug. 16, 1917.

**Rust-Resisting Finish.**—Rust-Resisting Black Finish Co., 202 John Street, Bridgeport, Conn. Circular. Describes the application of a rust-resisting treatment to iron and steel to give a permanent finish. The process, which can be applied to steel and wrought and malleable iron, is not a paint or a lacquer and employs a muffle furnace and superheated steam in connection with certain non-poisonous or explosive gases. The size of the material treated, it is emphasized, is limited only by the size of the furnace in use.

**Fuel Oil Burning Equipment.**—Fess System Co., 218 Natoma Street, San Francisco. Circular No. 18. Presents a brief illustrated description of a turbine burner for fuel oil. The special advantage claimed for this arrangement is that the rotation of the atomizing cup and its turbine blades subjects the oil to a high centrifugal velocity and the velocity of the air assists in breaking up the oil, as well as carrying it into the combustion chamber. A number of views showing the application of the burner, to various forms of heating apparatus are presented and a series of dimension diagrams and tables are included.

**Speed Changing Device.**—Moore & White Co., Philadelphia. Pamphlet. Refers to a special type of speed changing device which was illustrated in THE IRON AGE, Feb. 22, 1917. The special advantages claimed for this arrangement are the elimination of friction slip and the providing of a gradual change in the speed. A number of illustrations of the device in use are presented, together with a detailed description of its construction.

**Metal Cleaner.**—Oakley Chemical Co., 22 Thames Street, New York. Information sheet No. 857. Points out the advantages of using Oakite in the cleaning of munitions at various stages in their manufacture. In addition to a general discussion of the subject of cleaning shells, photomicrographs of oil that has been emulsified by Oakite and saponified by a caustic are given. Instructions for using Oakite and Oakite cutting compound in connection with the production of munitions are presented. A number of views showing the various steps in munitions manufacture for which the company's products are used are included.

**Grinding Machines.**—Ott Grinder Co., Indianapolis. Loose leaf circulars. Illustrations and descriptive matter explain the construction and operation of a universal grinding machine adapted for general toolroom service and a plain machine designed for producing large quantities of small duplicate straight or taper cylindrical parts. The leaflets are punched to fit a dealer's price book and specification tables of both machines are included.

**Twist Drills and Machinists' Tools.**—Detroit Twist Drill Co., Detroit. Catalog No. 18. Size, 5 x 7 1/4 in.; pages, 251. Covers an extensive line of machinists' tools which includes twist drills, reamers, chucks, sockets, milling cutters, taps, etc. Both high speed and carbon steel tools are made in a number of cases and for convenience in ordering contrasting colors of ink are used to designate each kind of material. Illustrations of the tools are presented at the top of the pages with tables of the various sizes that can be supplied underneath. Mention is made of the facilities possessed for turning out special tools and a number of tables of useful information are included. An alphabetical index of the various tools listed forms a part of the catalog.

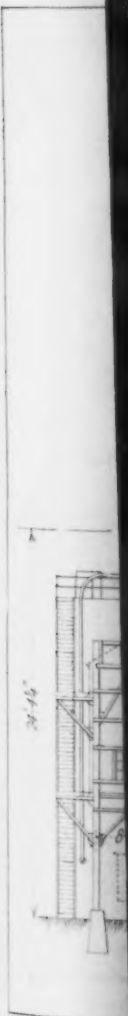
**Vertical Turret Lathe.**—Bullard Machine Tool Co., Bridgeport, Conn. Circular VT-624. Concerned with a 24-in. vertical turret lathe having one swivel turret head and one non-swiveling side turret head. The construction of the lathe is gone into at some length with sideheads in contrasting type to call attention to the subject matter contained in the paragraphs. A condensed table of specifications and an installation diagram and data are given, together with two views of the lathe.

**Turret Lathes.**—Gisholt Machine Co., Madison, Wis. Folder. Treats of the part played by the company's turret lathes in the manufacture of internal combustion engines. The successive stages from the billet to the finished cylinder are illustrated together with views of some of the operations.

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